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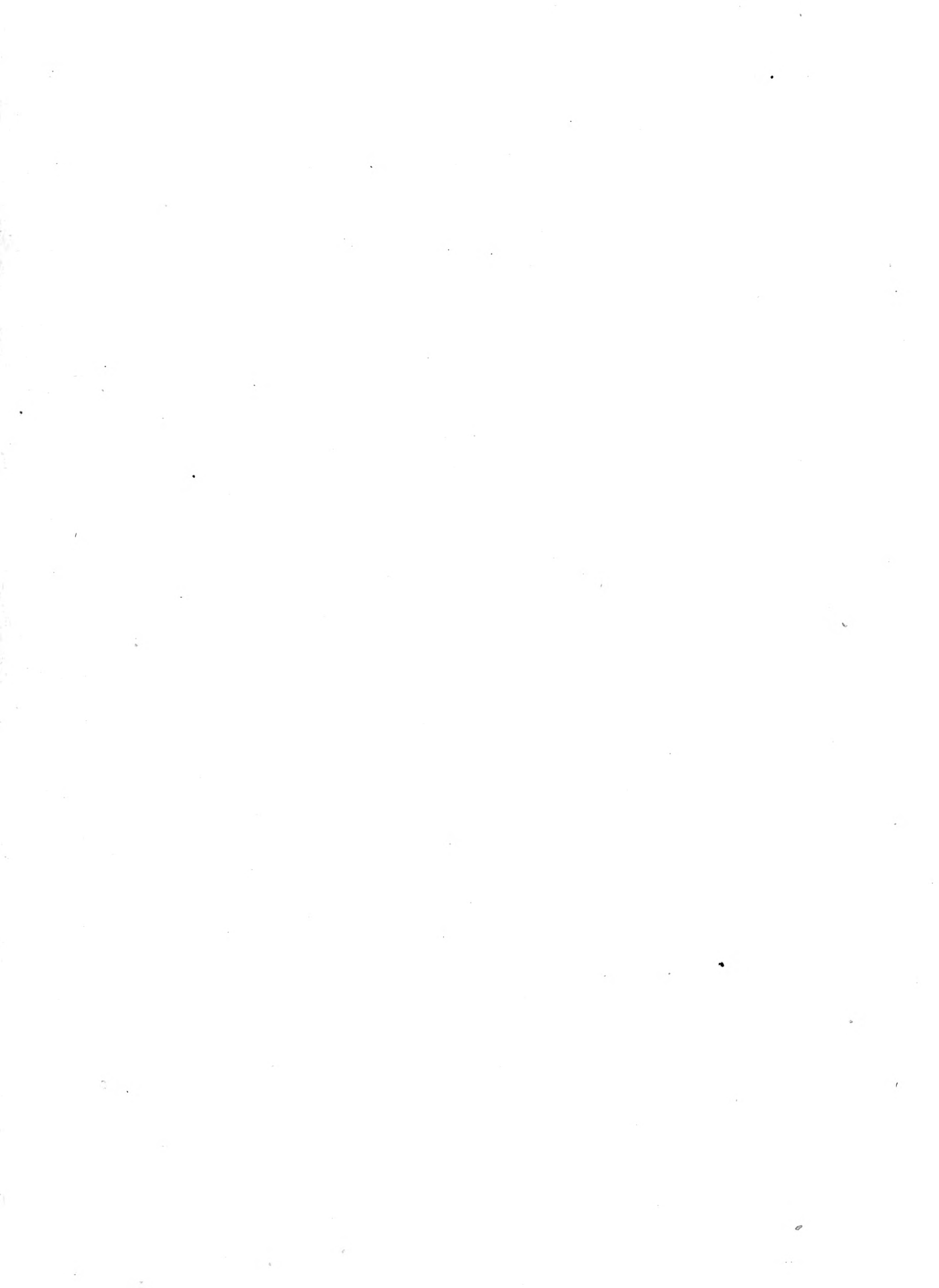
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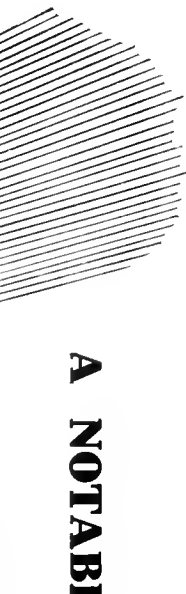
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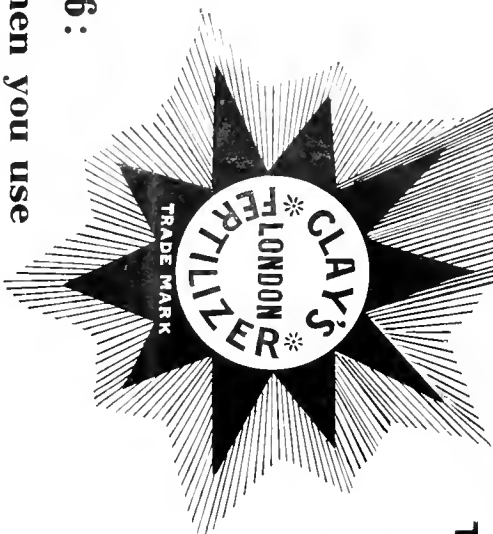
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THE

Gardeners' Chronicle

No. 1514.—SATURDAY, JANUARY 1, 1916.

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DEEP CULTIVATION AND FOOD SUPPLY.

ONE of the consequences of the war is that attention has been drawn to the necessity of increasing our home supplies of food and to the need for raising the standard of productiveness of the soil.

When reading some of the written opinions on the subject, however, one is inclined to suspect that the writers have either not given much attention to the economies underlying the question, or have had but little experience in the cultivation of the land.

Increased food production, whether by means of increase of area under cultivation in the case of land of low productivity, or by intensive methods tending to increase the productive power of the soil, means increase of capital (which may not be readily available) and of labour which at the present moment is very difficult to obtain.

Depreciation of the efforts of others is cheap enough, but it is not so easy to give practical suggestions, or suggestions that can be readily carried out with the effect of obtaining increased yield without reducing the margin of profit. There are few undertakings in which, as a whole, the margin of profit is more precarious than in the market gardening industry. The nature of most of the products precludes those means of preservation which are adopted with other kinds of food in order to balance the supply with the demand. Hence, any grower, before putting further capital into his land in the shape of deeper tillage, must assure himself that such capital will return a reasonable amount of interest, which he himself will receive and not the next tenant or his landlord.

Cultivation is an operation which re-

quires both time and money. The higher it is, the greater the outlay, and the longer the time required in which to develop it. Deficiency in the requisite capital, combined with the stern necessity for some immediate return, may delay, if not altogether prevent, the full development of potentialities.

A remark was once made within my hearing to the effect that one of the greatest factors in education is leisure. I believe it to be true. I think it is equally true with reference to the soil and cultivation. The term leisure I interpret as meaning comparative freedom from pressing economic considerations.

Some of us know by experience what may be accomplished in a few years with the most intractable and unpromising soil, where the circumstances permit, and when economic considerations are not paramount. Yet it can hardly be admitted that these methods altogether solve the problem.

It may be permissible to look upon some of the money spent in this way in the light of capital investment, but for the man who is compelled to get his living out of the soil deep cultivation, except that of a very rudimentary order, is out of question.

Radical improvement in the physical condition of heavy soil and sub-soils is for him a difficult problem. Yet this is precisely the kind of land which only unlocks its store of food and develops its latent fertility in proportion to the improvement in its physical condition effected by cultivation.

The advice, frequently given, to trench and put in two good layers of stable manure, or it may be one of manure and one of leaf-mould, is excellent when it can be carried out. Nothing will improve the texture of heavy land so quickly as liberal supplies of organic manure combined with frequent, deep and judicious working. But even then this treatment is required for a number of years in order to bring stiff agricultural land into the condition seen in the quarters of some of the vegetable gardens belonging to private establishments. And what of the cost? To begin with, it is almost impossible to-day to purchase any quantity of manure, except in a few particular areas, under 5s. to 6s. per load. These loads are usually considerably less than a ton in weight. As to applying two good layers, I find half a load to a pole or eighty loads to an acre is little more than a good sprinkle, and even this quantity is quite inadequate to bring about rapidly any great improvement in the texture of bad-working soils. On some of the heavy brick earths of Middlesex it was at one time by no means unusual to apply 120 tons to the acre when the market gardener first took them in hand; quite recently one man told me that if for any reason he missed manuring for a year, he increased the amount in the one following! What a chance for the deep spadesman!

Successful market gardening on a small scale, apart from the business aspect,

is very largely a matter of securing a close succession of marketable crops. This means that no time must be lost in clearing, preparing and planting the land, and this postulates ease in and frequent opportunity for working, together with avoidance of the delays by weather, which are all too frequent where there is not a considerable depth of what may be termed more or less permanent tilth. The latter is a very different sort of thing from the shallow transitory kind which may be obtained on the heaviest of land by a patient cultivator of good judgment and ample means in a favourable season, but which in an unfavourable one may never be obtained at all except by missing a particular crop altogether. This raises the question of the suitability of this type of land for the smaller cultivator, but into that I cannot enter here.

Most of us are very well aware that many crops can be grown on heavy land with much smaller quantities of stable manure than those cited above. Some of us know, too, something of the evil effects on the texture of heavy soils of repeated dressings of some kinds of artificial manures.

But any cultivator whose heart is in his land—his head must necessarily be in his business—not only aims at producing good crops at a reasonable cost, but also at producing permanent improvement in the physical conditions of his soil.

From my own experience in dealing with heavy land just brought under cultivation—excepting such as has been good pasture—and with heavy land that has previously received only ordinary cultivation for agricultural crops, I have found that even eighty loads of manure to the acre would not permit of much, if any, being used in the bottom of the trench—presuming that trenching was possible—for the purposes of improving the condition of the subsoil. It would, as Mr. Brotherton hinted in a recent article, be more profitable—at any rate, for a few years—to use all available manure as near the surface as the nature of the crop permitted in order to break down the tenacity of the top soil, and thereby render early working and early sowing possible.

By keeping the manure near the surface decomposition would take place more rapidly, and the possibility of manurial matter being washed down beyond reach of the roots would be greatly reduced. The fact that the roots of some crops do not penetrate deeply into well-broken but cold land is sometimes overlooked. It is in the infantile stages of growth when a good supply of finely-divided humus is most needed and when a deficiency may have the most disastrous effect on the crop. Further, a layer of manure some distance below the surface in a soil that has not been well worked down to a fine condition to the depth of the manure is apt to be so tenacious of moisture that it will not part with it readily to the soil above, and until the roots get down into the manure, crops are often seen to suffer though there may be ample reserves of moisture in the soil. This condition is not likely

to arise in a soil long cultivated, but frequently occurs on freshly-broken land.

In my own case, and when using manure in autumn in half-decayed condition, I have frequently had it spread over or immediately under the surface, and harrowed in during early spring. This method gave better results, both as regards crops and quality of tilth, than in other instances where the manure was buried in the usual fashion, during the process of digging. *F. G. Drew, University College, Reading.*

(To be continued.)

POTERIUM OBTUSUM.

THIS Japanese species (see fig. 1), the finest of all the Burnets, was shown by Messrs. Barr and Sons at the meeting of the Royal Horticultural Society on August 17 last, when the Floral Committee conferred on it the Award of Merit. The specimens shown on that occasion did not represent this handsome plant at its best. A well-grown plant makes a bushy specimen about 3 feet high, with long, pinnate leaves, consisting usually of six pairs of rounded leaflets, so that the foliage is an additional attraction. The flower-stems are freely branched, and bear on each terminal shoot pendant, crimson-coloured spikes up to 3½ inches in length and about 1 inch in diameter. During the summer a long succession of these beautiful tail-like masses of flowers, consisting chiefly of the highly-coloured filaments, are produced. The plant is easily cultivated and grows freely in light, rich soils in situations exposed to full sunshine. Like the other members of the genus, the species may be increased by division in the autumn or spring. The correct name is *P. obtusum*, not *P. obtusatum*, under which name it was shown. *W. I.*

NOVELTIES OF 1915.

ORCHIDS.

IN taking our customary review of the Orchids which have been produced, or come into prominence, during the past year, we find that the number certificated is smaller than usual, doubtless owing to the war.

The novelties in Orchids are, with trifling exceptions, from the hands of the regular hybridists, both professional and amateur, who have worked on scientific principles. These have made fine displays both at the R.H.S. London shows and at the Manchester and North of England meetings. The Royal Horticultural Society gave eighty-five awards to novelties. This is under the average, the deficiency being chiefly accounted for by the absence of two or three former exhibitors. That there will be no lack of novelties in the future is evident in the number of new seedlings, chiefly flowering for the first time, published in our periodical lists of hybrid Orchids, in which nearly four hundred are registered in 1915.

As a constant exhibitor of the best forms, J. Gurney Fowler, Esq., Brackenbush, Pembury, takes the lead, having obtained sixteen First class Certificates and thirteen Awards of Merit. His plants are of the highest class, both in floral and cultural points. His First class Certificate plants were *Brasso-Cattleya Cliftonii albens* and *B. C. Cliftonii* Fowler's variety, two good whites; *Cattleya Sybil* var. *Scintillant*, and *C. Transylvanica*, both of rare colour; *C. Laegeeae*, Fowler's variety, of model form; *Dendrobium Triumph* (*Dalhouseanum* × *thysiflorum*), appropriately named; *Odontoglossum Mars*, O. Princess Mary, O. President Poincaré, O. Menier St. Vincent, O. Pembury, and the fine O. *Georgius Rex*, which, with its large spike of twenty-eight flowers, each 4½ inches across, occupied the place of honour at

the Holland House show, securing a First-class Certificate and Lindley Medal. The other F.C.C. plants were *Laelio-Cattleya J. F. Birkbeck*, Fowler's variety, *Odontonia Charlesworthii* Fowler's variety, and *Sophro-Cattleya Sylvia*. The Awards of Merit went to *Cattleya Trianae alba* Queen Elizabeth, a large, pure white; *C. Harold* Fowler's variety, *C. Drapsiana vinosa*, *C. Hardyana alba* Fowler's variety, *C. Sybil rotundo bella*, *Cymbidium Schlegelii* Fowler's variety, *Odontioda Red Cross*, *Dendrobium Hookerianum* Fowler's variety, with fringed petals, *Laelio-Cattleya King Manoel* (one of the richest in colour of the medium-sized *Laelio-Cattleyas*), *L. C. Canhamiana* Fowler's variety, *L.-C. eximia* delicatissima, and *L.-C. Thyone* Fowler's variety. Sir Jeremiah Colman, Bart., Gatton Park (gr.

Miltonia Hyeana F. M. Ogilvie, and (at the Chelsea Show) the Davidson Cup for the pretty white *Cattleya Mendelii* Queen Mary. W. R. Lee, Esq., Plumpton Hall, Heywood, obtained on August 31 a First-class Certificate for *Cattleya Sybil Georgius V. Rex*, a sterling novelty of rich colour, and, on April 13, Awards of Merit for the fine *Odontoglossum Leviathan* and *Odontioda Zenobia* Leeana.

Cypripediums were shown in large numbers during the year, but many failed to reach the high standard now required. G. F. Moore, Esq., Chardwar, Bourton-on-the-Water (gr. Mr. Page), showed (at the first meeting of the year) *C. Christopher* var. *Grand Duke Nicholas* and *C. Pyramus* Chardwar variety, both flowers securing First-class Certificates. R. Windsor Rickards, Esq.,



[Photograph by W. Irving.]

FIG. 1.—POTERIUM OBTUSUM: FLOWER-SPIKES CRIMSON.

Mr. Collier), whose groups always contain interesting rare species and good hybrids, secured First-class Certificates for *Catasetum Bungeothii* "Mrs. Tom Fielden," a large, clear white; *Laelio-Cattleya Isabel* Sander Gatton Park variety; *Odontioda Colmaniae*, a good yellow and scarlet flower; and Awards of Merit for *Odontoglossum eximium xanthotes* and *Cattleya Mendelii* Mrs. Snee, a fine survival of the old Hackbridge collection. F. M. Ogilvie, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), showed *Brasso-Cattleya Digbyano-Schroderae* Shrubbery variety, the largest white, and gained a First-class Certificate; he also obtained Awards of Merit for *B. C. Vilmosiana* Shrubbery variety,

Usk Priory, Monmouth, obtained Awards of Merit for *C. Mrs. Rickards*, a model flower, finely marked; *C. Iona* Priory variety, and *C. Swallowtail*. J. F. Hambury, Esq., Brockhurst, East Grinstead, showed many hybrids, and secured an Award of Merit for *Cymbidium Comingsbyanum* Brockhurst variety. Baron Schroder, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed *Laelio-Cattleya Anaconda*, one of the most richly coloured hybrids of the year. W. Thompson, Esq., Walton Grange, Stone, Staffs (gr. Mr. J. Howes), who has shown selections of his fine hybrid *Odontoglossums*, obtained an Award of Merit for *Odontoglossum crispum* Perfect Gem (a seedling form). C. J. Phillips, Esq.,

Sevenoaks, obtained a similar award for *Odontoglossum Sandhurstense*.

E. R. Ashton, Esq., Broadlands, Tunbridge Wells, showed several good new Orchids, and secured an Award of Merit for *Brasso-Cattleya* Admiral Jellicoe Broadlands variety.

NURSERYMEN.

To Messrs. Sander and Sons, St. Albans, belongs the honour of introducing the two best of the very few new Orchid species of the year, both of which secured Awards of Merit, viz., the remarkable *Bulbophyllum Balfourianum*, and the pretty white *Vanda luzonica*. In the fine albino *Cypripedium Curtisii* Sanderæ, which gained a First-class Certificate on June 8, they showed the best imported novelty of the year. Their awards for hybrids were:—First-class Certificate for *Cattleya Lady Veitch*, a charming white variety; and Awards of Merit for *Laelio-Cattleya* St. Alban (rich yellow), *L.-C. Invincible* His Majesty, *L.-C. Gold Star*, and *Lycaste Janet Rose*. Messrs. Charlesworth and Co., Haywards Heath, who regularly show groups of interesting species and fine hybrids, secured First-class Certificates for *Cattleya Warszewiczii* Mrs. E. Ashworth and *Cattleya Venus Princess Mary*. They also gained Awards of Merit for *Odontioda Aphrodite* and *O. Patricia*, in which the effect of new colours in large *Odontoglossum*-like flowers is shown; *Odontoglossum crispum* Queen of the Belgians, a large and handsomely blotched seedling form; and *Laelio-Cattleya Fascinator-Mossiae* Moonlight, a pretty albino.

Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, famous for their fine strain of *Odontoglossums* and *Odontiodas*, have on several occasions shown selections of good quality, securing for several of them the new award for seedlings, "Preliminary Commendation." Other Awards of Merit were obtained for *Odontoglossum Aglaon Orchidhurst* variety (shown at Chelsea), *Brasso-Cattleya* Mars, *Cattleya Ajax Primrose* Dame, *C. Ashtoniae* alba, and *C. Maggie Raphael* Sandhurst variety. Messrs. Flory and Black, Slough, secured First-class Certificates for *Cattleya King George* and *Laelio-Cattleya Golden Queen*, two fine yellow flowers well meriting the distinction; and Awards of Merit for *Cattleya Olympus*, *C. Tityus Rex*, *Cypripedium Arthurianum* Langley variety, *Laelio-Cattleya Fascinator-Mossiae* var. *Imogene*, *L.-C. Nena*, *Odontioda Lambeana* Nellie, and *Disa Blackii*, the latter an acceptable addition to greenhouse Orchids.

Messrs. Stuart Low and Co., Jarvisbrook, Sussex, obtained First-class Certificates for three of the handomest novelties of the year—*Laelio-Cattleya Sybil*, Low's variety, *L. C. Alex* (a fine yellow), and *Cattleya Hardyana* His Majesty, a very handsome dark flower. They also obtained an Award of Merit for *Brasso-Cattleya Cliftonii* var. *Sir John French*. Messrs. J. and A. MacBean, Cooksbridge, secured Awards of Merit for *Laelio-Cattleya Helius*, *Cattleya Paula*, and *Sophro-Cattleya Pearl*, and showed many other interesting novelties. Messrs. Hassall and Co., Southgate, the raisers of the handsome *C. iridescens* and its hybrids, which have been so well shown during the year frequently, obtained the R.H.S. Award of Merit for the dark and well-formed *Cattleya Moira rubra*.

The following novelties in Orchids were illustrated in the *Gardeners' Chronicle* in 1915:—

Brasso-Cattleya Cliftonii albens, Supp., February 27.

Brasso-Cattleya Menda, March 20, p. 153.

Bulbophyllum appendiculatum, January 23, p. 38.

Bulbophyllum Balfourianum, July 24, p. 53.

Bulbophyllum Binnendijkii, January 23, p. 38.

Bulbophyllum mirum, January 23, p. 39.

Cattleya citrina (at Chelsea), May 22, p. 280.

Cattleya Lady Veitch, October 2, p. 220.

Cattleya Sybil (two extreme varieties), August 21, p. 119.

Cymbidium Alexanderi albens, January 16, p. 26.
Cymbidium Schlegelii Fowler's var., February 27, p. 108.

Cypripedium Arthurianum Langley var., January 9, p. 25.

Cypripedium Curtisii Sanderæ, June 19, p. 338.

Cypripedium Iona Priory var., November 27, p. 341.

Cypripedium luteum, May 15, p. 257.

Cypripedium papuanum, n. sp., August 28, p. 131.

Cypripedium Sanderianum, October 16, p. 243.

Dendrobium Triumph, February 13, p. 76.

Laelio-Cattleya J. F. Birkbeck Fowler's var., April 10, p. 192.

Laelio-Cattleya Gold Star, July 31, p. 60.

Laelio-Cattleya Sybil Low's var., May 29, p. 297.

Odontioda Aphrodite, December 11, p. 370.

Odontioda Latona, January 23, p. 48.

Odontioda Zenobia Leeana, April 24, p. 218.

Odontoglossum Herculaneum, March 13, p. 132.

Odontoglossum Leviathan, May 1, p. 230.

Polystachya paniculata, August 7, p. 85.

(To be continued.)

THE RULES OF BOTANICAL NOMENCLATURE.

It has long been apparent to those who, like myself, desire to have correct names for the plants in their gardens, that strict adherence to the rules accepted, or supposed to be accepted, by botanists, has become impossible, and I do not think we can have a much better illustration of the confusion which arises if we attempt to follow them, than your recent article on the revision of the genus *Meconopsis*, recently published by Sir David Prain in the *Kew Bulletin* No. 4 of this year. Gardeners must have Latin names for the plants that they grow, and a good many of them do not much care whether the names are correct according to the rules of botany or not, so long as the same name is used by everyone for the same plant. Others, like myself, prefer to use correct names when it is possible to do so, provided that these names are not continually changed and rechanged in accordance with the latest ideas of botanists who, in other parts of the world or in England, may by such a careful study as the one in question, have arrived at the conclusion that the names in current use are wrong. And when once a plant has been cultivated for a long period under a name which has become generally known, it is almost impossible to get a new name into general use.

The writer of the article in question has shown how this affects the genus *Meconopsis*. I will mention one or two instances which have occurred in my own work. When I was writing the monograph of the genus *Lilium*, I examined, with Mr. Baker's help, the original specimens of Japanese Lilies described by Thunberg, and we agreed that the plant described and figured by Sir J. D. Hooker in the *Botanical Magazine* as *L. Krameri* was the same as Thunberg's *L. japonicum*, and on the ground of priority adopted the latter name. Again, in the case of the Lily which was generally grown as *L. Thunbergianum*, a name adopted by such good botanists as Lindley, Regel, Baker and Duchartre, we changed its name, for precisely the same reason, to that of *L. elegans*, Thunberg. Nearly forty years have elapsed and the old names are still generally used. In the first volume of *The Trees of Great Britain and Ireland* two cases occur, in one of which—namely, *Araucaria imbricata*, we did not follow the rule of priority on the ground of the general use of the name *imbricata* for a very long period, though there are two older and, perhaps, more appropriate names—*Araucaria Molina* and *A. chilensis*, Mirbel. In the other case we adopted

the oldest name, *Thuja plicata*, D. Don, for the tree generally known as *T. gigantea*, Nuttall, but still commonly catalogued and known by nurserymen as *T. Lobbi*. I myself cannot get out of the habit of calling it *T. gigantea*; and when I do call it *T. plicata* most people do not know what I mean. There are other cases in which we have not thought fit to adopt the names used by Sargent and others for various reasons; and if we have sinned, we sin in good company.

To me it is quite clear that the attempt to enforce these rules strictly is impossible, as I believe it will be in the case of *Meconopsis* Wallichii and *M. nepalensis*; and though I do not blame Sir D. Prain for using what he considers more correct ones, I do not think that the names he prefers will be adopted by those who have long known the plants under the names used by Sir J. D. Hooker in the *Flora of British India*. Hooker knew both the plants a great deal better than De Candolle or Wallich did, and it seems to me that where the evidence for a change of name is so slight as in this case, the names used in the *Flora of British India* are good enough to follow.

My own idea, which is greatly strengthened by similar difficulties in zoological nomenclature (of which I have abundant instances in the names of English birds and butterflies), is that whenever a competent and careful author has published a generally accessible systematic work, showing evidence that he had sufficient material or knowledge of the objects described, to enable him to form a sound opinion, such work should be accepted by future students as the starting-point for nomenclature. The great majority of the older authors had neither the knowledge nor the materials to enable them to describe what they called species. Too often they described from single specimens, sometimes as imperfect as the one on which De Candolle's *Stylophorum nepalense* was based, without knowing the exact origin of the specimen, or whether it was typical of the species. Such so-called types and such so-called descriptions, have no right to priority, and however carefully studied will only lead, as they have notably done in British ornithology, to continual changes of name about which the highest authorities do not and never will agree.

If the Botanical Congress is ever held in London, I, though having no claim to be called a systematic botanist, will to the best of my power uphold the above opinion, which has been becoming stronger as my knowledge grows; and though I expect that the naturalists of the United States will disagree with me, I do not despair of the support of many who realise the depth of confusion into which the present rules are leading us. For if things go on as they are, can we wonder if a future generation of horticulturists—who ought to work in collaboration with botanists, just as botanists ought to work with horticulturists—should find their salvation in adopting a new code of rules for themselves, than which I can conceive no greater misfortune for both these allied branches of science. The subject is a very difficult one, but it will have to be dealt with by a radical reform sooner or later, and I cannot conceive a subject more fit to be discussed in the pages of the *Gardeners' Chronicle* or one in which its editors, past and present, could more skilfully guide us.

Let it only be remembered that scientific nomenclature should be looked on as a servant, and not as a master; that what were good rules fifty years ago are not applicable to the advance in our knowledge of variation and hybridism; and that the immense number of local scientific periodicals now published are inaccessible to the great majority of both gardeners and botanists; and we shall soon agree upon some rules which will overcome a great many of our present difficulties. *H. J. Elwes, Colchester.*

The Week's Work.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOME, Ellfield Manor, Basingstoke, Hampshire.

SHRUBBERY BORDERS.—A light forking of shrubbery borders will not only give the garden a tidy appearance, but bury all fallen leaves, which will prove a valuable manure. Take the opportunity to first give the borders a dressing of short manure. A policy should be inaugurated



of enriching the borders with manure once in three or four years. This can be made an annual charge by dividing the whole area to be dealt with roughly into three or four parts and manuring one part each

season. This will equalise the expenditure on manure and labour. Where bulbs are grown in the borders care must be exercised in digging not to injure them. The pruning of such shrubs as need it should also be done and the grass edges trimmed, to give the garden a clean and orderly appearance. *Buddleia* should be cut hard back: in the case of *B. variabilis magnifica* by pruning severely and using a good dressing of manure at the roots, we may confidently expect the flower-spikes to be 2 feet in length. *Ceanothus azureus* Gloire de Versailles should also be cut back hard when grown in bush form. This beautiful shrub is usually grown against a wall for shelter, but here—650 feet above sea-level—it does well in the open exposed to severe winds from the southwest. *Alyssum argenteum* is a good plant to associate with this *Ceanothus*—either as an informal edging or groundwork, for both plants flower approximately at the same time.

SOME JANUARY FLOWERS.—We have so few flowers in the garden during the winter that we should cherish such as may be expected to bloom some time in winter. Among these is the beautiful *Iris stylosa*, which may often be had in bloom during December. The flowers are injured by frost when they expand, therefore when frost threatens they should be gathered and allowed to develop in water. They have a faint perfume. This *Iris* seems to do best when left to grow undisturbed for many years. It does well beneath the foot of a wall facing south, and forms a pleasing feature at the foot of a dry wall bounded by a gravel path. The white variety is not equal to the blue for beauty. *Anemone blanda* is another winter-flowering plant deserving attention, but it must not be confused with the later-flowering *A. apennina*. The flowers when pulled last well in water. Some growers recommend a partially shaded border for *Anemones*, but this species grows well in full sunshine during its flowering period. *Heleborus niger* seems almost unaffected by cold weather. Lengthened stems and cleaner flowers are obtained by placing a hand-bell over them. When replanting Christmas Roses, choose a deep, rich soil. *Erica carnea* is an early-flowering plant, but we can never be quite sure how near to the New Year the flowers will open. Like other Heaths, it flourishes in peat and leaf-mould, but will grow fairly well in a heavy clay when established. From a sowing made in May the Giant Double Daisy will often flower in January, and it will still fulfil its purpose as a spring flower.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

STRAWBERRIES.—The beginning of January is a good time for the majority of growers to start their first batch of pot Strawberries with every prospect of success. The plants may be started in a heated pit on a bed of fermenting leaves, as the bottom warmth will gently stimulate the



roots, and prevent early attacks of red spider. Very little, if any, fire heat will be necessary to maintain the temperature at 40° to 45°, which should not be exceeded much during the early stages, except by a few degrees during the daytime. Select well-ripened plants with single crowns in 2½-inch pots, and as soon as the flower-trusses appear stand the plants in the lightest part of the Strawberry house, or place them on a shelf in the early Peach house, where the temperature is 50° to 55°. Let fresh, warm air circulate freely amongst them. Syringe the foliage on bright days and pick off the weak side trusses before the flowers open.

FIGS.—Pot Figs which were started early last month are beginning to grow freely, and the night temperature may be increased to 60°, with a rise of 10° by day. Fermenting materials, consisting chiefly of leaves, are very valuable for use in the cultivation of pot Figs: the hot-bed will not only assist in maintaining suitable atmospheric moisture, but also a suitable temperature. Admit a little fresh air early on bright days on all favourable occasions, and use the syringe freely two or three times daily. Houses containing trained trees, which in many cases answer for the early houses, should be closed to obtain ripe Figs in May and June, but first see that the borders are in a proper condition. Start with a night temperature of 50°, and increase the amount of warmth slightly as the buds become prominent. Syringe the trees, and otherwise treat them as recommended for those in pots.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castledon, Cheltenham, Gloucestershire.

MILTANIA VEXILLARIA. Plants of this beautiful *Miltania* are growing freely, and they should be afforded every encouragement to enable them to build up stout pseudo-bulbs. Let the roots have only sufficient water to keep the compost just moist, and the surroundings must be kept damp by sprinkling the stage and floor with



water. This, however, must not be done to excess: the grower should be guided to a great extent by the weather, and the position of the houses. An excess of moisture in the atmosphere at this season will occasionally cause the tips of the leaves to decay, especially if attention is not paid to ventilation. However, well the plants may be grown the young leaves often adhere to each other, and become distorted un-

less they are released. This must be done carefully with the handle of a budding knife, and if carried out in the early stages little harm will accrue. The young growth must be examined at intervals for thrip marks, and if this pest is present, the house should be vaporised at once.

BRAZILIAN MILTONIAS.—All *Miltonias* belonging to this group should be examined, and any that require it may be repotted, but those not sufficiently advanced can be left for a few weeks later. The principal species and natural hybrids are *M. Clowesii*, *M. cuneata*, *M. Regnelli*, *M. Binotii*, *M. Bluntii*, *M. Russelliana*, and *M. spectabilis*, with its variety *Moreliana*. *M. spectabilis* should be grown in a shallow pan to which a wire handle is attached whereby the plants may be suspended from the rafters of the intermediate house. The pseudo-bulbs are developed at intervals on a creeping rhizome, and, in consequence, the growths soon reach the edge of the receptacle. This can be obviated to a great extent if, at the time of repotting, all the old and useless back pseudo-bulbs are cut away, and, as growth extends, the lead or growing point pegged on the compost. The other *Miltonias* mentioned may be grown in either pots or fairly deep pans, filled to one-third of their depth with drainage material. The rooting medium should consist of *Osmunda-fibre* two-thirds, *Sphagnum-moss* one-third, and some partly-decayed Oak leaves. The soil should be pressed firmly around the rhizomes, and the new shoot may be allowed to rest on the compost. Large specimens require a thorough overhauling. After the old pseudo-bulbs and dead roots have been removed, several pieces should be potted together to form a compact specimen, taking care that a few growing points are in the centre of the pan. Each piece must be made secure, if necessary, with a wire peg. For some weeks after the plants have been disturbed the roots must be watered with great care: the compost should become moderately dry before applying water, for an excess of moisture would cause the young shoots to decay. The majority of *Miltonias* grow best in a rather shady position, either in the intermediate house or at the cooler end of the *Cattleya* division. Light is necessary, but the plants must not be exposed to strong sunshine for any considerable length of time. In spring and summer the plants should be sprayed lightly overhead with tepid water.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WAXTAGE, Lockinge House, Wantage, Berkshire.

CARNATIONS.—In winter, Carnations, like the majority of plants grown in glasshouses, need all the sunlight available. Should the glass have become partly obscured through deposits from fogs, it should be cleansed. A dry atmosphere must be maintained by the judicious use of



fire-heat and careful ventilation. The pots will now be filled with roots, and more stimulants must be given than hitherto. Cuttings inserted at the beginning of last month are ready for potting into 2½ inch pots. A compost, consisting of two parts loam, one part leaf-mould and coarse sand, is suitable. When potted, place the plants near the roof-glass in a house where they may be kept close for a few days to recover from the disturbance. Afterwards they should be gradually inured to cooler conditions. Another batch of cuttings may be inserted if necessary.

WINTER-FLOWERING PELARGONIUMS.—These plants have passed out of flower, and if suitable cuttings are available a batch may be inserted. The most promising shoots are those which have been most exposed to the light. Fill the required number of 4-inch pots with a light, sandy compost, making it fairly firm. Before inserting the cuttings cover the surface with a thin layer of fine, dry sand. Insert four or five cuttings in each pot, water them in, and place the pots on a shelf in a moderately warm house.

SCHIZANTHUS.—The earliest batch of these plants is ready for the final shift. Pot the plants in a fairly rich compost. A mixture of loam, leaf-mould, manure from an old Mushroom bed, wood-ashes, and coarse sand forms a suitable rooting medium. The plants should be kept growing steadily in a cool, light house, only using fire-heat to keep out frost. An occasional light fumigating with a nicotine compound will keep the plants free from aphids. Clarkias and Godetias require similar treatment to that given to Schizanthus.

CELSIA CRETICA.—This hardy perennial plant makes a very useful subject for the conservatory, where tall plants are needed. Seeds may be sown now in pans or boxes, germinated in a greenhouse, and, when large enough to handle, the seedlings may be pricked out into boxes. At no time must they be grown in a high temperature. Their final potting should be into 7-inch pots; a rich compost is necessary.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. Lord North, Wroxton Abbey, Banbury, Oxfordshire.

ONIONS FOR EXHIBITION.—Onions required for exhibition should be raised from seed sown now in pots, boxes, or other receptacles. Use fine soil mixed with material from an old hot-bed, and pass the ingredients through a 4-inch sieve, adding sufficient sand to render the mixture porous.

If preferred, a mixture of loam, leaf-mould, and sand in equal proportions may be used. I prefer the use of 6-inch pots as seedpans, as they allow the ball of soil to be turned out entire, which is an advantage when transplanting, for then

there is less danger of injuring the roots. Fill the receptacles a day previous to sowing, and well moisten the soil. Sow the seeds thinly on a level surface, slightly cover them with soil, place a sheet of glass on the top of the pot or pan, and on this a layer of brown paper. Germinate the seeds in a temperature of 65°. When the seedlings appear grow them in a cooler house, in a position close to the roof-glass. Let them have plenty of ventilation, but do not expose them to cold draughts.

PEAS.—Make a sowing of a dwarf early variety of Pea, such as Little Marvel or Veitch's Victor, to furnish pods in April. Sow the seeds 2 inches apart and 1½ inch deep in boxes filled with light soil. Place the boxes in a cool house, such as a Vinery or Peach house that has just been started. When the seedlings are 2 inches high, transfer them to 10-inch pots filled with a compost consisting of two parts loam—with plenty of fibre—one part manure from a spent Mushroom bed, or other partially decayed manure, and a little fresh wood-ash. Grow six plants in each pot, and place the pots in a cool, light position, where the seedlings may receive plenty of fresh air, but not draughts, which predispose them to mildew. Should mildew be noticed, remove the affected parts im-

mediately, and spray the remaining ones with one of the proprietary washes, or a solution of soft-soap and sulphur, at the rate of two ounces of soft-soap and half a pound of sulphur to each gallon of water.

TOMATOS. Make a sowing of Tomatos to furnish plants for successional cropping to those raised in the autumn. Dibble in each seed separately, 1½ inch apart and ½ an inch deep. Use 6-inch pots or boxes filled with a mixture of one part loam, one part leaf-mould or manure from an old Mushroom bed, and sufficient sand to render the compost porous. Place the receptacles in a temperature of 65°, in a light position close to the roof-glass, and endeavour to maintain a steady growth from germination onwards. Water should be applied sparingly, or it will increase the tendency which Tomato seedlings have at all times, and especially at this season, to become drawn. Sunrise and Early Market are suitable varieties for early cropping.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcott, Eastwell Park, Kent.

WEATHER CONDITIONS AND PROSPECTS FOR 1916. After the coldest November experienced in these parts for twenty-five years, we had a very wet period, and by the middle of December 5½ inches of rain had fallen in sixteen days. This very materially hindered all work in the fruit garden, and it is necessary to make the most of



every opportunity to catch up arrears. This will not be an easy matter in many establishments, for in most gardens a large proportion of the staff has joined the Army, and it is almost impossible to fill the vacancies with suitable men. But fruit is an important article of food, and every effort should be made to keep the work in connection with the fruit garden well in hand.

THE FRUIT ROOM.—Keep the fruit room scrupulously clean. Examine the fruit at regular intervals with a view to removing all that show signs of decay, and note the varieties ready for immediate use. A good supply of late Apples is an important asset in all households, and every effort should be made to maintain a supply till the latest possible date. As a general rule, too large a proportion of early and mid-season Apples and Pears is planted, with the result that it is almost impossible to prevent having a superabundance in the late autumn, and a shortage at the end of the season. This should not be the case, seeing that there are plenty of good late varieties of Apples; a goodly proportion of late sorts should therefore be included when planting. Amongst the best late culinary varieties are Bramley's Seedling, Lane's Prince Albert, Annie Elizabeth, Newton Wonder and Striped Beeting. Where Dunelm's Seedling (syn. Wellington) succeeds, the variety should be largely planted, but experience has proved that it is not a reliable sort in many soils, so that it is advisable first to plant experimentally of this excellent late Apple. The newer Edward VII. is a promising variety. The firm, clean fruits keep well, the tree has a good habit of growth, and appears to possess a robust constitution. The medium-sized and small fruits of several late culinary varieties are esteemed for dessert when fully ripe late in the season. Of the typical dessert varieties, Lord Hindlip, Claygate Pear-

main, Cockle's Pippin, D'Arcy Space, Allen's Everlasting, Wyken Pippin and Northern Spy are all late keepers, and, if fruits of these are stored in suitable conditions, in a cool, dark room, kept at a uniform temperature, but not too dry atmospherically, they will provide a supply of good Apples late in the season. The newer variety, William Crump, is a promising late dessert Apple. It is a cross between Cox's Orange Pippin and Worcester Pearmain, and keeps in good condition later than either of its parents.

THE "FRENCH" GARDEN.

By P. AQUATIS.

PLANS FOR 1916.—It behoves every grower when reviewing the year's working, to take into consideration the results as a whole before he arrives at a satisfactory conclusion. This point is often overlooked in regard to the intensive cultivation of vegetables, yet it is essential to bear in mind that the original cost in relation to



the preparation of the ground should not be entered solely against the first crop, but should be proportionate to every crop which occupies the ground until the end of the season. One is often apt to impute the failure of any one crop to ungenial weather. Before coming to such conclusion one has to look back upon the initial operations, the state of the plants when set out, whether a catch-crop has been marketed in proper time, and also if a chief operation in relation to a crop that has failed has been done either satisfactorily or in due time. The causes of failure will often be found close at home, and, knowing how mistakes have arisen, the grower will be able to take the necessary steps to prevent them in future.

It must be admitted that this year has tried the most patient gardener; late frosts were followed by dry weather in June and July, which may be considered worse for vegetation than when the drought occurs later in the season.

To counterbalance this the financial results have passed all expectations. All crops, except the staling in June, realised abnormally high prices. This may have been due to the absence of competition from abroad, or a shortage of labour, but the prevailing opinion is that the scarcity of vegetables was due more to the vagaries of the weather, which was detrimental to field crops. There the "French" gardener scored, as he could keep his plants under shelter till he was able to put them safely outside, and also because of the opportunity he had to water the crops whenever required.

The shortage of labour may cause American implements to be more extensively employed; these tools are of a high pitch of excellence, and with their use the "French" gardener can do his work far better than can skilled labour in the open. The Planet, Junr., can do in two hours more than three men in a day, while the seed drill will sow any seeds from Turnips to Beans; it drills at any distance, and any quantity; it opens the drill, inserts the seeds, and covers them at one operation. A man with such a machine can sow an acre of Onion seeds in a short day's work.

Next season will probably see a great curtailment of such crops as early Cos Lettuce on hot-beds, Melons, Endive, and Cucumbers in frames, but early Cauliflowers, Carrots, and Turnips on hot beds should be a sound speculation, whilst Onions, Cabbages, and Winter Greens promise to hold their own. Crops of Beans forced on hot-beds in March and cold frames in April should not disappoint the grower.

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Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations. The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.5°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, December 30 (10 a.m.): Bar, 29.7°. Temp. 50°. Weather—Fine.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—

Rose Trees, Shrubs, Perennials, &c., at Stevens's Rooms, 38, King Street, Covent Garden, at 12.30.

MONDAY AND FRIDAY—

Dutch Bulbs, at 12, Herbaceous Plants, Hardy Shrubs and Roses at 1.30, by Protheroe and Morris, 67 and 68, Chancery Lane, E.C.

WEDNESDAY—

Dutch Bulbs, at 12, Border Plants and Flowering Shrubs at 1.30, 1,410 cases Japanese Lichens at 3, by Protheroe and Morris.

THURSDAY—

Roses at 1, by Protheroe and Morris.

The Law as to
Encroaching
Tree-Roots.

The problem of an unreasonable neighbour is one with which most owners of gardens are confronted at some time or another. A frequent source of dispute is to be found in questions arising out of the encroachment of trees on an adjoining garden, and it may be useful, therefore, to consider for a few moments the legal position of the owner of a garden some of whose trees have extended, or may extend, their roots on to his neighbour's land. Most of the cases dealing with this subject are of considerable antiquity, and the difficulty of extracting legal principles therefrom is considerably increased by the fact that the reports of those times are couched in a quaint mixture of English and bad Norman-French, in comparison with which the latinised names of certain plants known to the amateur horticulturist are almost simple!

From a case decided in the year 1614 we discover that human nature was pretty much the same in those days as it is now. The owner of a garden was possessed of a remarkably fine tree, whose roots spread out in search of nourishment until they found a happy hunting-ground in the soil

of his neighbour's garden. Eventually the owner of the tree considered that the time had come when it might serve a more useful purpose if it were transformed into boards, these being presumably required for the repair of his dwelling-house. Accordingly he proceeded to carry out his utilitarian designs, but the adjoining neighbour considered that, as he had for so long offered hospitality to the roots of the tree, he was reasonably entitled to a proportion of the spoil. He therefore proceeded next door and helped himself to what he considered his fair share of the boards in question. Thereupon litigation ensued between the parties. The owner of the tree pleaded that the roots must follow the ownership of the tree; on the other hand, the neighbour urged that if anyone had planted a tree on his land he would be entitled to the benefit of it, and similarly as the roots had come to him uninvited the same argument would apply. The decision of the learned Chief Justice of that period was somewhat cryptic in style, and, being quite short, it may be here quoted in full as an instance of the language employed in those times: "Que le Plaintiff ne poyet limit le Roots del' Arbor, how far they shall grow and go." History does not record how much the wiser were either the plaintiff or the defendant when they heard judgment thus delivered!

In another case reported in the same year it was held that where a tree grew in a hedge and derived nourishment from the land on both sides of the hedge, the two adjoining owners must be regarded as tenants in common, i.e., they must both be deemed to have a right of ownership in the tree.

About eighty years later some neighbours were again at loggerheads on a similar point, and it was then decided that the same rule must be followed, provided the trees were planted on the extreme boundary dividing two adjoining plots.

In the year 1827 the question again cropped up, but in this instance the Court considered that the real question to be decided was: On whose land was the tree first planted? Apparently, the judge followed the view that the ownership of the tree also carried with it the ownership of the roots, and he took leave to doubt the correctness of the decision in the two cases last above referred to. It was also pointed out by him that in article 672 of the French Code our gallant neighbours had expressly taken precautions to avoid disputes of this kind arising between adjoining owners, doubtless on the principle that "prevention is better than cure." Accordingly the owner of a French garden was prohibited by the Code from planting his trees at less than a certain distance from his neighbour's boundary, and if he did so his neighbour was expressly given the right to cut down the offending tree.

Towards the end of last century we find neighbours still wrangling over the subject, and the matter was exhaustively discussed according to modern ideas, and was eventually carried to the highest court of the land. In this case the real dispute was in respect of overhanging branches, but

various arguments were put forward (by way of analogy) in connection with the cases as to encroaching tree-roots above summarised. The views of the various writers of the text-books on the subject were also discussed at length, and although the law as to underground tree-roots did not have to be expressly decided, and therefore the case would not necessarily be binding on that point, yet sufficient was said by the judges to show almost beyond possibility of doubt what view they would take if they were called upon to give a direct decision with regard to tree-roots.

The owner of the tree urged that it was possible for him to secure by mere lapse of time the right to have the roots of his tree encroaching on his neighbour's soil, and he argued that such rights were in fact similar to the rights of light which a person is entitled to enjoy if he has had uninterrupted light to his premises for a continuous period of twenty years.

His opponent strongly disputed this on the ground that an obstruction of the light within twenty years is an easy precaution, while a trespass caused by overhanging eaves of a building is one which can be immediately observed, and he urged that if a person aggrieved does not take steps to protect himself against visible trespass for a period of twenty years he must not grumble if after so long a time the courts refuse to assist him. In the case of the roots of trees, however, he contended that the position was entirely different inasmuch as the encroachment would be underground and therefore unobservable. Certainly it would seem unreasonable to suggest that a man must be perpetually digging up his garden to see whether his neighbour's tree-roots are encroaching if he does not want the lapse of time to bar his rights. Furthermore, there is the additional difficulty that encroachment by a tree is gradual and progressive. A portion of the root might have encroached over twenty years ago, while another portion might have grown during quite recent years, and it would be impossible to say precisely where the dividing line must be drawn. Also, although the early roots might have intruded twenty years ago, those portions which represented increasing thickness would be more recent.

The conclusion at which the Court arrived is clearly shown in the judgment of Lord Justice Lindley, who stated that, without giving any notice, an owner or occupier of land might free it from the obstruction of encroaching tree-roots so long as he confined himself and his operations to his own land, including the space vertically below its surface.

Quarrelsome neighbours may, however, be advised to note that the Court refused to allow either party their costs of the action (as distinct from the appeal) inasmuch as, although the owner of the tree failed in his action, the Court considered that the owner of the adjoining garden was guilty of "very unneighbourly conduct" in objecting to an encroachment which was quite harmless. Presumably, however, there would be no cause for censure if the owner of a garden removed

roots because they were obstructing the foundations of a house which he proposed to build.

It is perhaps fair to add that, notwithstanding this case, a well-known writer has expressed doubts whether tree-roots which have trespassed for more than twenty years can be interfered with, as he urges that the law does not require impossibilities and the course of nature underground must be recognised. It is, however, difficult to imagine that any Court would fail to give effect to the views of Lord Justice Lindley as above expressed, and the only safe course for the horticulturist to adopt is to make certain that trees intended to be permanent are planted well back from the boundary line.

ROYAL BOTANIC GARDENS, KEW.—We are informed officially by the Board of Agriculture and Fisheries that on and after January 1, 1916, the following fees will be charged for admission to the Royal Botanic Gardens, Kew:—On Mondays, Wednesdays, Thursdays, Saturdays, Sundays, and Good Friday, 1d.; on Tuesdays and Fridays, except Good Friday (Students' Days), 6d.; a charge of 3d. is made for the admission of photographic apparatus. Bath-chairs will be permitted to enter the gardens during public hours when the condition of the paths is suitable on payment of 1s. on Students' Days (as above), and 6d. on other days. Students' permits, available till the close of the calendar year and obtainable on written application to the director by bona fide students and artists, will be issued on payment of a fee of 5s. These permits will cover free entrance on Students' Days and before public hours on weekdays except on Good Friday and Bank Holidays.

Until recently she enjoyed fairly good health, though for the past two years she had been confined to her bed. She retained her mental faculties to the last, but her sight and hearing had become somewhat impaired. She and her husband had between them received from the Benevolent Institution a total sum of between £400 and £500.

NITRATE OF SODA. We learn from the President of the Board of Agriculture and Fisheries that, in consequence of the exceptional demands for freight at the present time, it has not yet been found possible to arrange for the shipment of nitrate of soda from Chili as was contemplated.

ECONOMY IN THE EDINBURGH PARKS.—The question of municipal economy has been engaging the attention of the Edinburgh Town Council for some time, and considerable economies have already been effected. The City Chamberlain has issued a report on the question. This con-



FIG. 2. FRUITS AND FOLIAGE OF *PYRUS CRATAEGIFOLIA*.

[Photograph by E. J. Wallis.]

PYRUS CRATAEGIFOLIA.—As the name suggests, this Crab (fig. 2) resembles somewhat in foliage a *Crataegus*, in fact it has been called *Crataegus florentina*. The species is a native of Northern Italy, and deserves to be much more widely cultivated in gardens. Both in flower and fruit *P. crataegifolia* is a most attractive bush or small tree. The branch illustrated is from a tree about 8 feet high, growing in Kew Gardens. The pure white flowers, each about $\frac{3}{4}$ inch in diameter, are freely produced in clusters along the branches during June. The fruits are about $\frac{1}{2}$ inch long, and borne on slender, cherry-like stalks. There is a slight difference in the shape of the fruits on different trees: those shown in fig. 2 are roundish-oval, whilst in some trees the fruits are round. They turn yellow as they ripen, and have finally a flush of red on the exposed side. The calyx is persistent. In autumn the leaves assume a bronzy-red tinge; these, together with an abundant crop of fruits, were very attractive at the end of October. Half-a-dozen trees make a pleasing group in the pleasure grounds, or the species is suitable for planting singly.

Season tickets, available till the close of the calendar year, can be obtained on written application to the director on payment of a fee of £1. These tickets will cover admission on any day during public hours.

RETIREMENT OF A FORESTER.—Mr. WILLIAM MACBAIN, who has been forester on the Glenurquhart estates of the Earls of SEAFIELD for thirty-eight years, has retired, and the post has been filled by the appointment of Mr. JOHN LAIRD, forester to Lord POWERSCOURT at Iniskerry. Mr. LAIRD's father was for many years forester at Fyvie Castle, Aberdeenshire.

CENTENARIAN WIDOW OF A GARDENER.—The death has just taken place at Bath, at the advanced age of 101 years, of the widow of a gardener named ALLEN, who had for a considerable period been in receipt of a pension from the Gardeners' Royal Benevolent Institution. Mr. ALLEN died in 1897, and his widow was then elected to the widow's pension of £16 a year, which she enjoyed until her death. Mrs. ALLEN was born the year before the Battle of Waterloo, and has lived in the reign of five sovereigns.

tains a reference to the Parks' Department, from which it appears that a saving of £1,000 on bulbs, shrubs, etc., has been effected for the current year. In consequence, the floral embellishments of the parks will be on a less elaborate scale. This economy might perhaps be continued in future years, but any further economies in the way of labour would require experiment to ascertain if they were practicable without detriment to the well-being of the parks.

SCOTTISH HORTICULTURAL TRADE AND RECRUITING.—An influential deputation, representing the leading market garden and seed industries of Scotland, interviewed the Board of Agriculture for Scotland on December 23 at Edinburgh to represent to the Board the difficulties which would be experienced by market gardeners and seedsmen if their staffs were still further reduced through recruiting, and to urge upon the Board the necessity of taking some steps to prevent further depletion. The deputation was organised by the seedsmen of Glasgow and Edinburgh and the Edinburgh Market Gardeners' Association. Mr. WILLIAM CUTHBERTSON, of Messrs. DORRIS AND CO., President of the Horticultural

Trades Association of the United Kingdom, introduced the deputation, and pointed out the fact that no class of seedsmen were reserved, although foremen in market gardens were exempted. Mr. D. BELL, of Messrs. BELL and BIEBERSTEIN, referred to the necessity of seed orders for farmers being properly executed, and stated that the experienced foremen in certain departments were absolutely necessary, at least until May, 1916. He was followed by Mr. W. P. MALTMAN, of Messrs. ALEX. CROSS AND SONS, Glasgow, who supported Mr. BELL's remarks, and referred to the difficulty experienced in getting deliveries and executing orders. Mr. CAIRNS, of Messrs. AUSTIN AND MCASLAN, Glasgow, referred to the position as it affected the retail trade, and Mr. T. W. SCARLETT, Edinburgh, represented the difficulties of the seed Potato trade. Mr. DAVID KING, President of the Edinburgh Market Gardeners' Association, spoke on the subject of the effect on market gardening. Sir ROBERT WRIGHT replied to the deputation in a sympathetic manner, and Mr. CUTHBERTSON expressed the thanks of the deputation to the Board for their consideration.

WAR ITEMS.—Private THOMAS FENDER, 6th Black Watch, formerly a gardener at Duncrub Gardens, Perthshire, in the employment of Lord ROLLO, has died in France from wounds. He was the son of Mr. THOMAS FENDER, gardener at Cultquhey Castle, Perthshire, and was only nineteen years of age.

— C. A. THOMSON, a former member of the staff of gardeners at Hartigge, Jedburgh, the estate of Lord Stratheden and Campbell, has been killed at the Dardanelles. He was serving in the 2nd Battalion of the Australian Contingent.

— Private DAVID MILLIGAN, 2nd Royal Scots Fusiliers, has died from hemorrhage at Rouen. Before enlisting he was a member of the staff in the gardens of the Duke of Bedford at Cairnsmore, Kirkcubrightshire.

THE FRENCH JOURNAL OF HORTICULTURE.—We are glad to receive a copy of the November issue of the *Journal* of the National Society of Horticulture of France. Although greatly reduced in volume, the contents show that the great society is carrying on its invaluable work, in spite of the grave pre-occupations and the peremptory claims of the war. In the Book of Honour (Livre d'Or), the names of Messrs. ALFRED NOMBLOT, General Secretary of the Society, LUCIEN ALBERT GRAYVREAU and FRANÇOIS DESPAILLES, are cited as having won the distinction of mention in Army orders for acts of valour. Of horticulturists who have fallen, the following list is given:—Dead—MM. BELIN, son of M. BELIN, president of the Orchid Committee; — BILIAUT, son of M. AUGUSTE BILIAUT, head-gardener, château de Croissy (Seine-et-Oise);

CORBIN, son of M. HENRI CORBIN, head-gardener, château du Val, Saint-Germain-en-Laye (Seine-et-Oise); LAFAY (FRANÇOIS), son of M. LAFAY, de Montrenil; PICORÉ (CONSTANT), son of M. J. J. PICORÉ, professor of Arboriculture, Nancy; — RAYMOND, son-in-law of M. THÉVENY; RICHARD (ALBERT), market gardener, Meaux (Seine-et-Marne). Wounded—M. DESPAILLES (FRANÇOIS), superintendent, Rochefort-en-Yvelines (Seine-et-Oise).

THE PAGODA AT KEW GARDENS.—The Pagoda was built in 1761-2 to the design of Sir W. CHAMBERS. As originally built, the main roof with the ornamental chains and hoops to the terminal pole were of copper, double gilded. The minor roofs were covered with highly-coloured iron plates, and ornamental dragons crouched at the hip terminals of the roofs. The dragons were in wood, and treated with highly-coloured enamels. These features existed up to about 1820. But the iron cover-plates of minor roofs and the wooden dragons must have perished and been removed soon after, when the roofs were slated. The severely straight lines of

these roofs—now shorn of dragons and Eastern colour—were much lamented, and in 1845, when "an expensive scaffold had been erected round the Pagoda to paint the wood, etc., point the brickwork, and erect a new terminal pole," Sir W. J. HOOKER suggested that it was a fitting opportunity to restore the original features of the Pagoda by fixing new "metal or glass" dragons to the angles of the roofs. This was supported by Mr. DECIMUS BURTON, who, however, wished to improve on the original design. His sketch of the proposed alterations is still to be seen in No. 3 Museum. He suggested that in addition to restoring the dragons, the eaves should be curved up at the angles, and the roofs covered with copper, and that both roofs and brickwork should be painted to harmonise better with a Chinese structure. Projecting bells were to be hung at the hip terminals, and chains were to hang from the terminal pole to the eaves of the main roof. But the estimated cost of £3,500 for these alterations made their execution impossible. Sir W. J. HOOKER's suggestion to replace the dragons, and so restore the Pagoda to the original design, was estimated to cost £850, and proved also too costly for acceptance. Nothing daunted, he returned to the charge in 1856, renewing his suggestion of 1845 for the restoration of the dragons, etc.; but they were again "postponed for another year," and so the Pagoda remains to this day. On the occasion of executing the periodic painting and repairs at the Pagoda this summer—1915—investigation was made to discover the cause of so much rain coming through the roof and ceiling. The roof generally was found to be covered with copper. It is in excellent condition, and shows no signs of disturbance or repair since its original construction. The pole and its flashing, however, were found to be so defective as to need renewing at once. Authority having been obtained for this, a careful survey was made with a view to seeing how the new pole could best be got into position. All the evidence obtained, both inside and out, went to show that the old pole, about 30 feet long, had been got up by an outside scaffold and derrick, and dropped down through the hole made in the level table at the apex of the roof. But as all the painting at the various levels had been done from bracket or cantilever scaffolds, which are not suitable or high enough to get a pole up and into position from the outside, a plan was devised of raising the new pole by a cantilever fixed on the top floor and passing through the window. By this the pole was hoisted through the window of the ninth floor, up through the staircase well, and through the ceiling trapdoor into position. On taking down the old pole, a pencil note was found on the lower end, under the roof, recording that "this pole was erected by J. WICKENS, August 1, 18(?)7." A knot on the top of the third figure made this date very uncertain. But fortunately, on uncovering the table round the pole at the roof apex, two more records were found of the same character, with the date of 1867. This definitely fixes the date of erection of the pole just taken down. A further interesting discovery was made of a cut-in date of August 20, 1825, on the bed-plate on which the pole stands, and it is fairly certain that a new pole would be erected at the same time as the insertion of the bed-plate. There is evidence, therefore, that the various terminal poles were erected at the following dates: When the Pagoda was new in 1762, and in August, 1825, June, 1845, August, 1867, and the last in September, 1915. The "life" of these poles thus varies from twenty years upwards. It is more than probable, however, that the first pole did not last till 1825, but was renewed some time about the end of the eighteenth century. The present pole is, therefore, the fifth or sixth pole erected, and it is hoped that as this has been creosoted it will last longer than any of its predecessors. *Kew Bulletin.*

NOTICES OF BOOKS.

HARDY FLOWER GARDENING.*

FLOWER-GARDENING at various epochs has been mostly an affair of fashion. It is so still, but with a difference. Hardy perennials find a place in every garden of pretension, but there is much diversity in the manner of using them. Some folks regard them only as material for producing colour effects at special seasons, and make no pretence of cherishing a liking for the plants, nor do they afford space for any plant that is so unfortunate as to be innocent of these meretricious endowments. At the other extreme is the flower-lover who, while perhaps not averse from using the more floriferous plants for decorative gardening, yet keeps places also for those that display their quieter beauties less ostentatiously. Special borders are set apart for special flowers, where they are inspected with loving attention through every changing phase of growth. The quotation from this handsome, very profusely illustrated volume—"to make a beautiful flower-garden. He must consider all plants as a means to that end, not as the most important thing in themselves"—describes fairly how the subject is approached by the author. So obsessed is he with this idea that he, though with un concealed hesitation, acclaims the grass paths, where they are established between herbaceous borders, as not unsuitable for furnishing with bulbous plants. One feels that this, like much one sees in gardens, is placing flowers, very charming in themselves, as well as the parts chosen, at a disadvantage, and is, perhaps, no more to be commended than the strict economy that, at the final expense of floral effect, hesitates to employ enough material to furnish borders fully. Yet the whole question is one of difficulty, and thus it is in grouping that one artist employs plants in which another fails to discern any value. And so, though Mr. Wright finds occasion to refer to many other plants with approbation, his supreme choice falls on the few—the Phlox, Paeony, Hollyhock, Lily, Delphinium, Chrysanthemum and Perennial Aster—devoting separate chapters to their cultivation, uses, and varieties.

To some extent the title is misleading, inasmuch as not only are hardy perennials, in which, following De Candolle, annuals are included, but those not quite hardy are introduced, along with some whose foliage is non-deciduous, as well as Roses and other shrubs. In the best gardens no distinction is made as to what section belongs the plants employed in embellishing borders and beds, and there can be no objection, therefore to the use of these being urged here. It is a phase of gardening that admits of the widest latitude in choice and arrangement, and the chapters devoted to it will be warmly welcomed, as well as those which touch on other matters. In the remarks on propagation, chopping the clumps with a cutting implement is recommended, but separating the roots by means of forks, or at the last resort an initial soaking and washing of the roots in water is much better. Separate lists of plants—some descriptive, some merely the names—and an enumeration of gardens in England known by the author as worthy of noting for herbaceous plants are appended. Like all Mr. Wright's books, this is well written, though with a greater economy of words than is usual. It is just the work to choose for a present to the possessor of a garden who wishes to make the most of it without knowing how to proceed. *B.*

* *Hardy Perennials and Herbaceous Borders.* Illustrated in colours. By Walter P. Wright (London: Hendley Brothers, Bishopsgate) 12s. 6d.

POUR NOS AMIS FRANÇAIS ET BELGES.

CHRONIQUE SPÉCIALE (LX).

LE MARCHÉ DE NOËL.

PENDANT la semaine de Noël, les transactions au marché horticole à Londres atteignent leur point culminant. Il était curieux de voir jusqu'à quel point les opérations seraient, cette année, influencées par la guerre. Ceux qui ont connu Covent Garden dans ses périodes les plus actives, auront certes été frappés par le calme relatif qui régnaît la semaine dernière dans certains compartiments. Toutefois il convient de l'imputer moins à la diminution de la demande qu'à la difficulté d'amener certains produits en bonne condition. Dans les derniers temps, un nombre croissant de bateaux à installations réfrigérantes ont été requis, notamment pour le transport des viandes destinées aux troupes, et on annonçait même que tous allaient être mis à la disposition des autorités militaires. Le déficit constaté au marché portait donc surtout sur les fruits transportés en cales réfrigérées, alors que pour les fruits secs, les arrivages sont normaux. Pour ce qui concerne les envois de l'intérieur, l'on se plaignait cependant du refus des Compagnies de chemin de fer de renvoyer du matériel d'emballage dans les centres de production. Cette même situation, outre les retards considérables, rend les envois des produits français périssables difficiles.

D'un façon générale, la situation a été satisfaisante. Les Pommes du Canada et des Etats-Unis étaient offertes en quantité et s'échangeaient à bon prix. On compare souvent ces fruits aux Pommes indigènes, mais ce n'est pas être injuste pour les expéditeurs du pays de dire que si la qualité de leurs envois est peut-être supérieure, l'aspect et le triage en laissent encore à désirer. Ajoutons que les quelques grandes caisses de Pommes de France perdent elles aussi de leur attrait quand elles se trouvent près des emballages luxueux américains.

Outre les Poires indigènes, celles d'outre-Atlantique étaient bien représentées par les Winter Nellis, parmi lesquelles, malheureusement, beaucoup de fruits gâtés. Dans les envois français, peu abondants, assez bien de Doyenne d'Hiver (Easter Beurre) en caisses de 12, qui ne paraissent pas encore à point.

Les Raisins à peau dure (Almeria) de la Péninsule Ibérique résistent à toutes les vicissitudes du transport et arrivent comme d'habitude. Le beau produit des serres anglaises profite de la suppression des envois belges et faisait 1 sh. 6 à 2 sh. la livre pour le Gros Colman de choix, 3 à 4 shillings pour le meilleur Muscat, cela bien que, comme nous avons déjà eu l'occasion de le signaler, les acheteurs de l'article de luxe aient réduit leurs dépenses. Ce sont du reste les seuls, dirait-on, pour lesquels la guerre ait eu ce résultat. Beaucoup de bourses modestes disposent de plus d'argent qu'en temps normal et le marché s'en ressent très heureusement.

Dans le compartiment des légumes, les envois français souffrent de la lenteur des transports. Beaucoup de colis de Laitues et d'Endives sont restés près d'une semaine en route par un temps chaud et humide. Aussi les déchets ont été importants. Les derniers jours les arrivages se faisaient plus rapidement et les salades se sont vendues à des prix convenables, de même que les Asperges.

D'autres primeurs, notamment les Haricots, les Pommes de terre nouvelles et de faibles quantités de Pois, sont venues de Guernesey; l'Espagne fournissait également des Pommes de terre, tandis que Madère commençait ses envois de Haricots, qui ont réalisé de bons prix quand le produit n'avait pas souffert du transport. Tous

les légumes anglais étaient disponibles en quantités suffisantes.

Les Oranges d'Espagne n'ont pas fait défaut cette année, le transport n'exigeant pas trop de précautions, néanmoins les prix étaient soutenus. On assure que le gouvernement britannique, qui considère l'Orange comme article de luxe, en autorise l'importation en Allemagne d'où il suit un écoulement plus régulier de la marchandise. Il n'en est pas de même de certains autres fruits exotiques, comme l'Ananas, pour lequel l'important marché de Hambourg est bloqué. Aussi des arrivages énormes ont eu lieu à Londres et beaucoup de familles ont pu se procurer à un prix très raisonnable un succulent fruit pour leur dîner de Noël.

NOUVELLES DIVERSES.

NOUVELLES DE LA GUERRE.—M. Henri Gravenaux, vice-président de la Société Française des Roséristes, et capitaine au 23^e dragons, a été cité à l'ordre du régiment comme "officier modèle, énergique, d'un beau courage et d'un remarquable sang froid."

LES PRODUITS MARAÎCHERS EN BELGIQUE. Les Pommes de terre sont de plus en plus rares. On attribue à l'établissement du prix maximum, trop bas aux yeux des intermédiaires qui sont tentés de dévaler les stocks.

La ville de Bruxelles a chargé la police de rechercher les dépôts. De son côté, le conseil communal de Schaerbeek a fait procéder à des visites domiciliaires chez plusieurs marchands en gros de Pommes de terre; ceux-ci ont été forcés de mettre leurs provisions en vente et de les débiter aux prix fixés. Une liste de condamnations infligées par les Allemands renseigne de nombreuses personnes envoyées en prison pour avoir dépassé ces prix.

Depuis une quinzaine de jours, on a vu minutieusement et à l'improviste trois mille charrettes de maraîchers; on n'a presque pas découvert de tubercules. Depuis le même temps, il n'y a eu que 8.000 kilos de Pommes de terre mises en vente au marché bruxellois. A certains marchés de quartier on n'en trouve pas trace. Cependant il arrive clandestinement des envois assez importants, car la police a établi qu'à trois gares de voisin on avait déchargé pendant le mois de novembre, plus de 40.000 sacs de tubercules, destinés à des marchands de l'agglomération. Néanmoins il a fallu envoyer des délégués en province et en Hollande pour conclure des marches pour la capitale.

Le manque de Pommes de terre se fait vivement sentir aussi à Gand et ses environs. L'occupant a porté un nouveau règlement autorisant l'échange d'une Kommandantur à l'autre, et fixant le prix maximum à 12 francs par 100 kilos. Le conseil provincial de la Flandre orientale a nommé une commission d'achat de Pommes de terre, afin d'alimenter la ville jusqu'à la nouvelle saison.

NITRATES ARTIFICIELS.—La culture allemande souffre de plus en plus de la pénurie d'engrais azoté rapidement assimilable, pu suite de l'impossibilité d'introduire les sels du Chili. Les chimistes ont longuement étudié les moyens de produire du nitrate par des procédés qui soient d'application industrielle. L'Agence Wolff annonce que la question est entrée dans le domaine de la réalisation pratique et qu'à bref délai les fabriques mettront à la disposition de la culture des quantités croissantes d'engrais artificiels.

LES BESOINS DE L'ALLEMAGNE.—Les états centraux séparés des pays d'outre-mer qui leur envoyaient des quantités considérables de fruits et de légumes, surtout par le port de Hambourg, continuent à ratisser tous les produits disponibles dans les pays voisins. Pendant le seul mois d'octobre, l'Allemagne a acheté en Hollande 21.996.300 kilos de Pommes, 2.775.800 kilos de Poires, 706.800 kilos de Raisins, 9.455.300 kilos de Choux cabus, 2.684.400 kilos de Choux-fleurs, 20.403.700 kilos d'Oignons et d'Echalotes, 4.730.900 kilos de Carottes et 8.310.300 kilos de légumes non dénommés. Pour toutes ces catégories les envois vers la Grande Bretagne sont notablement inférieurs.

À PROPOS DES ROSES ALLEMANDES.—Les discussions auxquelles ont donné lieu les projets relatifs à la dénomination ou au boycottage des Roses allemandes ne sont pas finies. Un abonné de la *Revue Horticole* suggère le remplacement des variétés de mérite par des nouveautés plus méritantes, que les roséristes français pourraient obtenir à condition de diriger leurs recherches et leurs efforts dans le sens voulu.

OFFRE DE GRAINETIERS FRANÇAIS.—L'abbé R. Amat, Président du comité des jardiniers fleuristes de Serinac (Gand) fait au nom des producteurs de graines de cette localité, un appel aux acheteurs des pays alliés. Avant la guerre, une bonne partie de la production prenait le chemin de l'Allemagne et l'interdiction du commerce avec l'ennemi rend la vente très difficile actuellement. Aussi les cultivateurs cherchent-ils de nouveaux débouchés. Ils disposent d'un stock de graines de Phlox, Verveine, Oeillet, Giroflée, Thunbergia, Reine-Marguerite, Ipomoea, Zinnia, Dahlia, Ciste de coq, pour lesquelles ils seraient heureux de recevoir des offres, au kilogramme, marchandise prise à Serinac. Ils sont aussi disposés à fournir la récolte de la saison prochaine. Pour tous renseignements, on est prié de s'adresser à l'abbé Amat.

M. CLAASSEN.—Nous apprenons que M. C. H. Claassen, professeur d'horticulture de l'Etat néerlandais pour la province de Hollande méridionale, a demandé d'être relevé de ses fonctions, pour assumer celles de directeur du Service des marchés de la ville d'Amsterdam. M. Claassen a attaché son nom à divers traités d'horticulture très appréciés en Hollande et à l'étranger.

KORT OVERZICHT VOOR DE VLAMINGEN.

Mer Kerstmis bereikt de bedrijvigheid op de Engelsche Tuinbouwmarkt haar toppunt. Gezien de omstandigheden was de aanvoer van fruit en groenten dit jaar zeer bevredigend.

Verandering werd waargenomen op de voortbrengselen die in koelruimen moeten vervoerd worden. Voor de andere waren de verzendingen doorgaans zoo fabriek als in vreedstijd.

Het Fransch goed leed van de verfraging in het vervoer. Wat in goeden staat aankwam werd wel verkocht.

Over 't algemeen waren de marktprijzen hoog genoeg, zelfs voor ken-artikels, daar in de lagere standen steeds veel geld verdiend wordt.

In België neemt men opnieuw maatregelen om de beschikbaar stelling te verzekeren der aardappelen die in uiterst geringe hoeveelheden ter markt komen. Alhoewel bewezen is dat er onderhands nog al aangevoerd worden, heeft men moeten maatregelen nemen om rechtstreekse aankopen te doen op den buiten en in Holland.

A DRY HEAT STERILISER.

THE excellent results that follow sterilisation of the soil have been recognised both by scientists and practical men.

The principle of the operation is to heat the soil to a temperature which will destroy anything it may contain harmful to vegetation, both animal and vegetable. Thus the soil becomes freed from organisms that might be harmful to crops.

The original practice was to circulate steam among the soil, but this method is both onerous and difficult, except where the quantity of soil to be sterilised is sufficient to justify the outlay. Dry heat sterilisation has, in consequence, been resorted to, and has been found more adaptable to the need of the small market growers and private gardeners.

The stove illustrated in fig. 3 is suitable for the purpose: it is built entirely of bricks, and will consume any kind of fuel, as well as garden refuse.

The floor on which the soil is placed is situated between the furnace at one end and the

from the floor to hold the soil and to facilitate covering it during the process of sterilisation. Once the stove is heated thoroughly the temperature of the soil reaches 130° to 140° F. It is left for two or three hours, when it is turned and left again for a similar period.

The heat is more accentuated when the soil is in a moist condition (without excess), and kept covered with bags. The temperature to which the soil is heated by this means is certainly lower than when steam sterilisation is practised, yet one must bear in mind that the length of time the soil is kept at such a temperature compensates for this deficiency, and experience proves that the results are as beneficial to the crops. *P. Aquatics.*

PENRHYN CASTLE GARDENS.

THESE gardens have been famed for their beauty for many years, and being recently in the neighbourhood, I was anxious to see the many floral treasures they contain. Unfortunately, at the time when I called, accom-

panied by Mr. E. Beckett, Mr. Speed, the head gardener, was away; but Mr. J. Kneller, the foreman, gave us a most courteous reception.

panying me, I noted among these *Lapageria alba*, *Buddleia Colvillei* (quite a suitable subject with its semi-pendant growth), *Correa virens* and *C. alba*. These latter, on an unprotected eastern wall, had withstood 18° frost without any injury. The drooping blossoms are very attractive. *Rhynchospermum jasminoides* with its variegated form was luxuriating some 10 feet up the eastern wall.

Fuchsia conica, with its long stems of semi-drooping habit, was thickly studded with the deep purple blossoms. On the west wall were *Camellias* in great quantity and in perfect health. *Berberidopsis corallina*, 10 feet high, was smothered with its richly-coloured blossoms and dense green foliage. *Ginkgo biloba* (*Salisburia adiantifolia*), covering 20 feet of the 15-foot high wall, seemed at first a quaint sight to us, who know the tree so well as a specimen in the shrubbery or in the open. The plant was trained in fan shape and spur-pruned annually, the resulting growth displaying the handsome leaves in a semi-drooping condition. Its grandeur of foliage is certainly better thus displayed than when growing naturally as a tree. *Abelia rupestris* covered a wall space of 15 feet, the pink and white blossom thicker and more showy than usual. *Leptospermum lanigerum* and *Schizophragma hydrangioides* were handsome specimens, covering a goodly portion of the wall. A glorious mass of *Lonicera Halleana* emitted its fragrance near an open door. On the grass near the dell specimens of *Magnolia stellata*, some 10 feet high and 12 feet in diameter, were growing. What a beautiful sight such specimens must be in early spring! Amongst *Camellias* I noted a specimen of *C. alba plena* 10 feet high in splendid health. The large size of the leaves of *Diospyros Lotus* showed how well the situation suited it. *Eucryphia cordifolia* as a standard, 15 feet high, was thickly covered with blossoms; close beside it was a smaller plant of *E. pinnatifolia*. The true *Magnolia tripetala* (Umbrella Tree), with a stem 3 feet across at the base, must be a glorious sight when in blossom. *Eugenia apiculata*, 25 feet high, *Actinidia punctata*, *Magnolia speciosa*, *Escallonia Philippiana*, 9 feet high, 12 feet in diameter, with *Desfontainea spinosa*, 6 feet high and 8 feet across, and a half-standard of *Styrax japonica* 8 feet in diameter were other noteworthy specimens. One plant of *Fuchsia Riccartonii* covered a space of 18 yards across and was 15 feet in height. Never have I seen these hardy *Fuchsias* in such luxuriance of growth and blossom as here. In Lady Battersea's garden, Overstrand, Norfolk, there are fine specimens, but the Penrhyn bushes eclipse them.

The kitchen garden, with the well-trained fruit trees and the glass-houses, is some distance from the Castle. In all departments the same good culture prevails. We were interested in a bed of Onion Bedfordshire Champion. The seeds were sown the first week in April, and a small portion was thinned in the usual way. This portion was badly affected with the Onion maggot, whereas the remainder, which was not thinned, had no sign of maggot, but produced a full crop of desirable bulbs. It was evident that Onions can be grown well without thinning. Large crops of late Peas were in evidence. The variety Autocrat is here the favourite sort. A fine batch of Cabbage raised from seed sown on June 20 was coming into use. Hardy fruit grows well, and Apple Cox's Orange Pippin, trained against a slate wall 5 feet high, was producing a heavy crop of handsome fruit. Apples as cordons and bushes were also carrying excellent crops. Peas were bearing satisfactorily: a horizontally trained tree of *Beurre Hardy* had a stem 1 foot 6 inches in diameter, which testified to its advanced age.

In the glass department fruit is the most important feature. Grapes, Peaches, Figs, and Melons are grown, with a large batch of Straw-

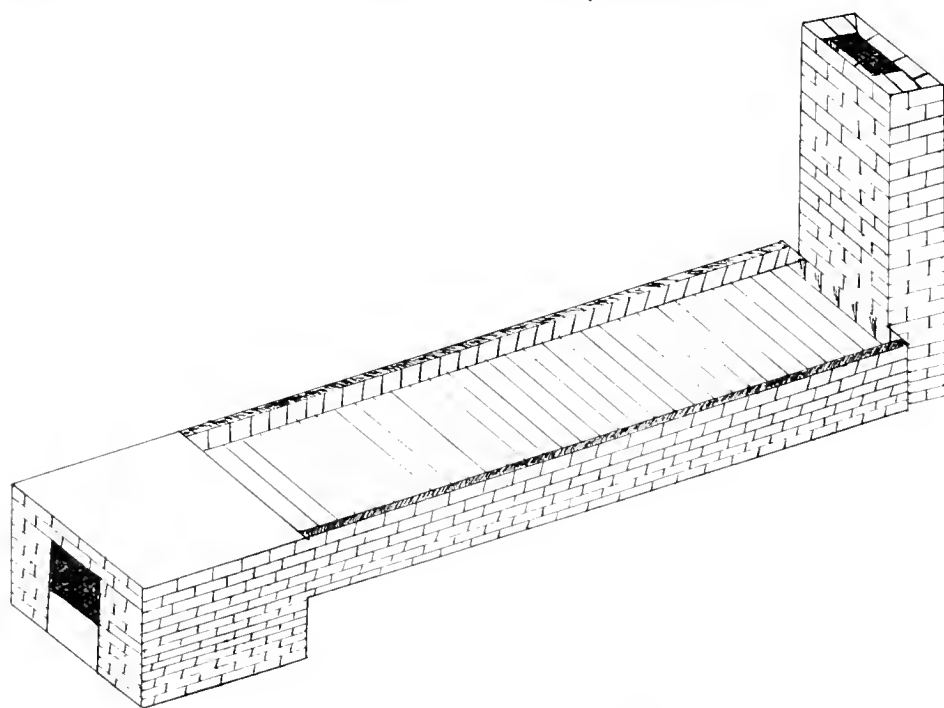


FIG. 3.—A SIMPLE DRY HEAT STERILISER.

chimney at the other; under it four flues run parallel and from them radiates the necessary heat. The length of the stove may vary, according to the requirements, up to 15 feet. The overall width is 4 feet 6 inches. There must be sufficient room on either side to permit a cart or barrow to be used. The furnace is 2 feet 6 inches by 3 inches, and the furnace entrance is 18 inches wide, while the fireplace is the same width, though it may be made wider where it is intended to burn chiefly refuse. The connection between the fireplace and the flues is on a continuous line. The middle partition between the second and third flue comes as far as the inner side (or back) of the fireplace, so as to divide the current of both smoke and heat. This current is again divided into two more chambers or flues, as shown in fig. 4, as it is essential to have the floor heated evenly.

The partitions of the flues are discontinued within 18 inches from the aperture of the chimney, while the outside walls are built in a tunnel shape till they join the inside of the chimney, the height of which rarely need exceed 4 feet over the floor of the steriliser, unless the stove is situated between high buildings. The outside walls are raised the height of two bricks

panied by Mr. E. Beckett, Mr. Speed, the head gardener, was away; but Mr. J. Kneller, the foreman, gave us a most courteous reception.

Entering the park by the Grand Lodge our attention was attracted by many magnificent trees and by huge clumps of blue *Hydrangeas* planted in bays along the winding carriage drive. With a background of *Rhododendrons*, the effect produced is charming. In this soil there does not appear to be difficulty in obtaining blue *Hydrangeas*, but rather in retaining the natural rose-colour. Blue predominates, even in such varieties as *H. Marien*, which here forms a bush 8 feet in diameter. The flower garden is situated on the western side of the castle, some distance from it. The note of simplicity is struck and maintained. Grass lawns reach to the very walls, no gaudy flower-beds being permitted to detract from the noble grandeur of the stately pile. The flower garden is on a southern slope which leads into a dell, with a mass of forest trees beyond, especially in the west, affording ample protection from strong wind. Truly a charming site, and one in which choice subjects revel which many a southerner cannot equal, even in his own favoured clime.

A wall, some 15 feet high, bounds this garden on three sides, against which are growing many

berries for forcing. Well-grown plants of Carnation Duchess of Westminster were noted; numbers of them had as many as 12 flowering shoots each. Violet Princess of Wales in frames was most striking. The plants are grown from single runners, and so freely do they thrive that each specimen had filled a space of 18 inches to 2 feet. The whole garden contains many features of interest, and the good cultivation displayed reflects the greatest credit on the veteran head, Mr. Speed [who has controlled these famous gardens for 52 years] and his energetic foreman, Mr. Kneiler. *E. Molyneux.*

FLORISTS' FLOWERS.

INDOOR CHRYSANTHEMUMS WITHOUT POTS.

WHEN labour in the garden is scarce we have to contrive various means of keeping the supply of produce as nearly as possible up to the normal amount. In these circumstances, when the time for propagating Chrysanthemums came round I resolved to try growing them outside during the summer, and thus save the labour of potting and watering. This has been practised in many gardens, but in most cases the plants have been potted up in their early stages and afterwards transplanted from five or six-inch pots into the garden. My plan, however, eliminated the use of pots altogether, and the plants flowered so successfully that I feel justified in giving an account of my experience. The cuttings were propagated in pure sand, and when rooted were placed in boxes. They were given the best treatment possible under the circumstances, and after being hardened, were planted about 4 inches apart in a cold frame on a deep bed of fine soil with leaves at the bottom. They were occasionally syringed, freely ventilated, pinched as they required it, and in due course planted in the kitchen garden. Choosing a favourable time, the plants were lifted with good balls of soil, and planted in double lines. The rows were one foot apart, and the plants set at the same distance in the rows: the double lines were 3 feet apart from centre to centre, thus giving a space of 2 feet between the plants. The roots were well watered, and each double row was staked with Pea sticks. No further watering was done, and the only attention given them consisted of hoeing the ground and pinching out the points. Early in October the plants were lifted and planted on the floor of a Peach house. Planks were set on end, and soil was placed over the roots to a depth of 8 inches. Stakes were driven in along the outside of this bed, and a fence of long Bamboo rods formed around it. By tying Bamboos across the bed the plants were kept upright. After planting, the soil was saturated with water. Only half a dozen plants flagged out of nearly 400. The others showed no signs of injury, although we were unable to lift them with more than a small amount of soil. They flowered well, and provided us amply with cut flowers. Thus they were grown and flowered without being potted or tied, with only one watering while they were outside, and with the watering in their young stages considerably reduced. So successful have been the results that, however large a staff I may have hereafter, I shall not again resort to potting decorative or single Chrysanthemums for the purpose of providing cut blooms. *William F. Bowles.*

NEW CHRYSANTHEMUMS.

THE following remarks on the newer varieties of Chrysanthemums may be of interest to exhibitors:—

JAPANESE.

MONA DAVIS (Davis).—This variety has smooth florets, evenly reflexing. It is a deep flower of bright mauve pink, a pleasing shade of colour.

CHARLES HARLAND (Davis).—This is a variety of purple amaranth colour with a distinct silvery reverse. The flowers are broad and incurving. It is a large bloom without any approach to coarseness.

EDITH CAVELL (Wells-Pockett).—This finely formed flower is coloured chestnut-bronze, with a golden bronze reverse.

CHARLOTTE E. SOER (Silsbury).—In colour this variety is rich yellow with an amber suffusion. The broad, reflexing florets curl elegantly at the tips.

SIR E. LETCHWORTH (Silsbury).—This novelty somewhat resembles the well-known Mrs. G. Drabble in shape and build. The colour is purple with a silver reverse.

A. F. ZOEFELD (Jones).—A very large yet refined variety with strap-shaped petals that are a vivid crimson colour.

FRANK LADDS (Jones).—In colour this variety is a rich shade of canary yellow. The broad reflexing florets together form a large firm flower.

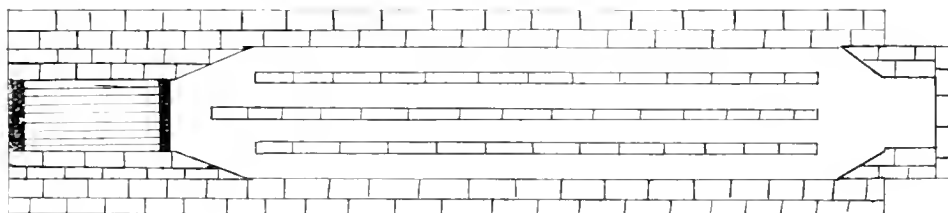
Phyllis Cooper. — One of the best of yellow singles. Tom Wren.—Of the Mensa type, Berth Fairs, rich deep orange with terra-cotta shading. Charles Fairs.—Also terra-cotta, but flushed with rose; and Molly Godfrey (a large flower borne on a long stem). *Judge.*

THE ROSARY.

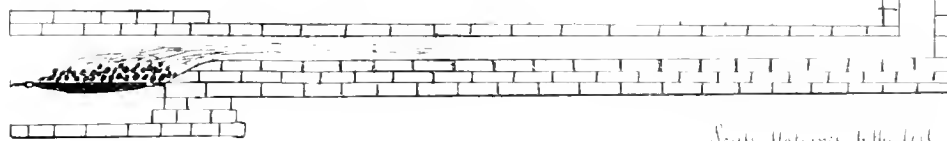
OLD ROSES WITH FRAGRANCE.

Now that we have so many new Roses without perfume, would it not be well if some of our Rose specialists would again take in hand some of the old varieties noted for their fragrance? After all, what is a Rose without a scent? I append a few names that occur to me at random, and no doubt someone will suggest others of the varieties that charmed in days gone by:—Charles Lawson, Géant des Batailles, Paul Ricault, Margarine de St. Amand, Jules Margottin, Chénérolé, Eclair, Marie

Transverse Section showing Position of flues



Cross Section



Scale Horizontal 6 ft. 0 in.

FIG. 4.—DRY HEAT STERILISER.

(See p. 10.)

Mrs. H. TYSOE (Tysoe). — A canary yellow sport from W. Turner, which is one of the best of incurved Japanese varieties. Of slightly older varieties, exhibitors would do well to include the following:—Captain Fox, of brilliant crimson colour, the bloom being of full exhibition size; General Smith-Dorrien, a good bloom of old rosy-red colour with chestnut shading; Fred Blackman, which has long, broad drooping florets, the deep cream ground being flushed with rose; James Stredwick, of rosy terra-cotta colour, with a salmon shading; W. Rigby, a golden sport from Mrs. G. Drabble, and of large size; Meadow, a very large bloom of deep mauve pink colour.

SINGLE.

Sweet Auburn. — This is a large exhibition flower; in colour, a deep orange ground overlaid with reddish terra-cotta, and shaded with rose. Monica Mitchell (rosy crimson shaded carmine). — The superb flowers are of fine form. Aristocrat. — A variety of the Mensa type of the richest golden yellow, with several rows of stout florets, which give it a massive appearance.

Rady, Marquise de Castellane, Magna Charta, Alfred Dumesnil, La France, Heinrich Schultheis Goubault, Duchesse de Caylus, Pierre Notting, Rubens, Cabbage. *E. M.*

ROSES SUITABLE FOR WEST INDIAN GARDENS.

THE Agricultural Superintendent of St. Lucia recommends the following varieties of Roses for general cultivation in gardens in the West Indies. The success of Rose cultivation in the West Indies depends to a large extent upon the kinds of varieties chosen, only Teas, Noisettes and Bombons being suitable:—Paul Neyron, La France, Rhea Reid, Caroline Testout, Meteor, Sunrise, Sahara, Sunset, Marechal Niel, Wm. R. Smith, White Maman Cochet, Pink Maman Cochet, Radiance, Marie Van Houtte, Madison, Mrs. Aaron Ward, Kaiserin A. Victoria, Clara Watson, Killarney, Etoile de Lyons, Catherine Meimet, Etoile de France, Helen Gould, Helen Good, Lady Hillingdon, Antoine Rivoire, Robin Hood, and Papa Gontier.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE LATE HON. JOHN BOSCAWEN.—In your appreciative notice of the late Mr. Boscawen you do not refer to the fortnight of hard and unrelenting toil which he put in for the Royal International Horticultural Exhibition in 1912. He was one of the half-dozen men who saved the situation by unremitting work behind the scenes, and British horticulture is grateful to-day, not for that work only, but also for the services he always rendered so willingly in connection with the flower shows of the Royal Agricultural Society. A Director of the R.I.F.S.

YEW POISONING. (See p. 585, Vol. LVIII.)—In County Meath cattle are not numbered by two and threes, but by thousands. When I was there there were large numbers, all apparently vigorous and healthy; and scattered about the ground on which they grazed were large Yews, all eaten off as high as the cattle could reach. In some cases they had even gnawed the bark. I questioned the herdsmen (who had been looking after cattle all their lives), and all they could say was that "they had heard that Yew was poisonous, but so far as they knew no harm had ever been done." The shape of the trees showed clearly that the injury had been going on for years. I still believe that vigorous, healthy animals (which the Meath cattle evidently were) are unaffected by eating Yew. T. Smith, Newry.

ASSIMILATION OF ATMOSPHERIC NITROGEN.

Referring to your note on p. 351, probably many of your readers beside myself will be unable to consult the works of the scientists you name, and would welcome a fuller article in your columns throwing further light on the subject. Hitherto I have understood (I am aware of a few assertions, none too lucid, to the contrary, that the vast store of free nitrogen in the air has only been available, so far as is known, for leguminous plants, which assimilate it through the medium of bacteria; the presence of the bacteria being easily detected by the naked eye on account of the nodules formed by them on the roots of the plants. Plants of other Natural Orders have apparently depended on soluble compounds of nitrogen for their supply of that element. It has long since struck me as unlikely that the atmospheric nitrogen should be so locked up, and that so few plants have learned to appropriate it, and one has expected the discovery of powers of assimilation hitherto unknown. Now, presumably, such discoveries have been made. Interesting points for elucidation would be: (1) Do the non-leguminous plants named in your note (*Acer Negundo*, etc.) make use of bacteria in obtaining nitrogen? (2) Is the process similar to that which takes place in leguminous plants? (3) Have any crops, other than of legumes, been found to enrich the soil, as a crop of clover does? (4) Do those who hold the view that the power of assimilation of free nitrogen belongs to all green plants, explain how assimilation takes place, and whether by bacteria or otherwise? Harold Evans, Llanishen, Cardiff.

[Owing to the delay in obtaining foreign periodicals it is not possible to give a detailed account of the recent Italian work on the assimilation of atmospheric nitrogen; but there is little doubt that this power is not confined to leguminous plants. For example, evidence has been brought forward that the nodules on the Alder and on various *Cyads* are the habitations of micro-organisms which "fix" atmospheric nitrogen. Again it is claimed that species of *Lolium*, habitually infested by a fungus, also possess this power. To answer the questions categorically there is evidence that (1) certain non-leguminous plants make use of micro-organisms in obtaining nitrogen; (2) the process so far as is known is similar to that occurring in the leguminous, but the details of the process are not known either in the leguminous or in the non-leguminous plants; (3) so far as we know no experiments have been made; (4) no satisfactory explanation has been advanced. Eds.]

SOLANUM GRANDIFLORUM.—This is a very handsome tree. The foliage is somewhat woolly; the tree has a spreading habit and brittle wood. The purple flowers are fairly deeply coloured, like those of the Potato, and some 3 inches across. So far as memory serves me it is variable. The largest I recollect seeing (at Pará, Brazil) had a bole about 10 inches or 12 inches diameter, and was perhaps 12 or 14 feet high. I do not remember seeing it "wild" in Malaya. H. E. Durham, Harford.

[*Solanum grandiflorum* is a native of Peru. It grows into a tree with large purple flowers and rather woolly leaves. It is not in cultivation at Kew, nor, as far as we know, anywhere in this country.—Eds.]

SOCIETIES.

ROYAL HORTICULTURAL.

DECEMBER 21.—The secretary informs us that at their meeting on the 21st ult., the president and council, confirmed the Award of Merit to Beonia "Mrs. J. A. Petersen," shown by Messrs. Stuart Low and Co. at the fortnightly meeting on December 7. The variety is of American origin, and belongs to the Gloire de Lorraine type. Specimens were exhibited in small sixty-sized pots, and they were blooming profusely, the flowers being deep pink. The foliage is dark, and shows a red colouring by transmitted light.

LINNEAN.

GENERAL MEETING.

DECEMBER 10.—At the meeting held on the 10th ult., Prof. E. B. Ponton, F.R.S., president, in the chair, Miss Marietta Pallis explained her paper, "The Structure and History of 'Play,' the floating fen of the delta of the Danube" (which was communicated by Prof. A. C. Steward, F.R.S., F.L.S.), of which the following is an abstract:

I. The definition of "Play."

Play is a Russian word; it signifies the floating thing or floating stuff, and is the name given by the fishermen of the delta of the Danube to a floating raft of vegetation built up almost entirely of living reed, *Phragmites communis*, *Trin.* *β flavescens*, *Green*, and *Godr.*, and earth.

II. Description of the morphology of the reed and of the structure of the underwater portion of Play. Explanation of the detachment of the swamp-reed, viz., of the formation of Play.

III. The reed-thicket or aerial portion of Play.

The variation in length of the aerial portion of the reed-shoots is so striking (they vary from about 4 feet to about 17 feet) that it suggests the presence of different varieties of reed. There is evidence that this variation is not specific, nor due to the factors of the environment, but is inherent in the reed. The progressive change in the size of the shoots is held to be due to the periodical morphological change which culminates in senescence and death. The different sizes of reed-shoots are held to be different branches of a definite and complicated reed system, the first and final branches of which do not co-exist.

A discussion followed. Dr. C. E. Moss, Dr. O. Stapf, Sec. L. S., the president, the general secretary, and Prof. F. E. Weiss taking part, and the author replied.

Mr. T. A. Dymes read a paper entitled "On the Seed-mass and Dispersal of *Helleborus foetidus*, Linn.," summarised as follows:—

The seeds of *Helleborus foetidus*, L., are remarkable in being shed from the follicle in a single mass, bound more or less tightly together by a thick, white, central strip of oleaginous tissue. This is the elaiosome of Serrander, and it is of raphid origin. Owing to the contrast of the shining elaiosome with the almost black seeds, the mass as a whole bears, at a short distance, a deceptive resemblance to the larva-beetle. Observations were made, over two consecutive nights, on the work of the snails, which disintegrate the mass by devouring the elaiosome, thus reducing it eventually to single seeds.

Experiments were also made with a view to establishing the possibility of molluscan dispersal of single seeds over a short distance. Observations in Nature, and on captive *Helix aspersa*, point to the conclusion that the elaiosome offers an attraction as a molluscan dainty in the way of food.

Experiments in the open do not support the idea of the larval resemblance being an adaptation to ornithochory, or that there is any regular dispersal by the birds of the neighbourhood.

Observations and experiments with the ants, *Donisthorpea nigra* and *Myrmica laevinodis*, prove that they carry off whole masses, fragments, and single seeds, and take them into the nest. On the other hand, their behaviour does not favour the suggestion that the larval "mimicry" is operative, so far as they are concerned.

The claim to myrmecochory is not a valid one. So far as the ants are concerned, neither the larval resemblance nor the massing brings to the species any advantage which it would not possess if the seeds were shed singly, as is usually, if not universally, the case with those that are adapted to these insects. The larval resemblance, which cannot be denied, suggests an adaptation to some still unrecognised agent or agents, and observations at the distributional headquarters of the species are much to be desired, in order to clear up the mystery of the mass.

Prof. Weiss, Mr. H. St. J. K. Donisthorpe (visitor), Mr. Clement Reid, Mr. E. Step, and Mrs. Stuart engaged in a discussion, replied to by the author.

The general secretary showed some slabs of "Figured Ebony" and samples of walking-sticks made from that material by Messrs. Henry Howell & Co., Ltd., of Old Street, Finsbury. The matter had been brought to his notice by Mr. M. White Stevens, who, as the result of his enquiries, came to the conclusion that the origin of this chance lot of wood in the docks was the Andaman Islands; if correct, this would point to the probability of the tree yielding this ebony being *Diospyros Kurzii*, Hiern, described by Mr. J. S. Gamble, in his "Manual of Indian Timbers," p. 453, as "Andaman Marble Wood or Zebra Wood," the wood hard, the heartwood streaked black and grey in more or less alternate layers. It is one of the most important trees of the Andamans, and of great value if it can be supplied in sufficient quantity and become known.

NATIONAL ROSE.

DECEMBER 23.—The annual meeting of the National Rose Society, originally fixed for the 14th ult., was held on the above date. There was a good attendance, about fifty members being present, and the president, Mr. E. Mawley, occupied the chair. After the reading of the notice convening the meeting, the ballot for the officers and members of the Council was taken. All were re-elected with the exception of the Rev. R. Powley, whose place on the Council was taken by Mr. R. Green. The annual report was then read by Mr. E. J. Holland, the vice-president, as follows:—

REPORT OF THE COUNCIL FOR THE YEAR 1915.

The council are pleased to report that the work of the society has gone on successfully during the past year. Owing to the war, the marked progress which has hitherto been recorded for many years is naturally not continued, but having regard to the circumstances, the present large membership must be considered highly satisfactory. Indeed, the council feel that the stability of the society in the face of such an adverse influence is most gratifying, and of good promise for the future.

The Spring Show was held in the Horticultural Hall on April 15, and proved a great success, though the number of exhibits hardly came up to that of the previous year. Besides the large attendance of members and their friends, the show was visited during the afternoon by a number of wounded soldiers and their nurses.

The Metropolitan Exhibition was again held in the gardens of the Royal Botanic Society. Though the date of the Exhibition, June 29, was somewhat earlier than has been usual, a truly remarkable collection of roses, whether considered from the point of numbers or of quality, was brought together. The weather was perfect and the show in every way one of the finest the society has held. Her Majesty Queen Alexandra, the society's Royal patroness, again graciously honoured the society by paying a prolonged visit to the show and evincing great interest in the exhibits.

STEWART & CO., 13, St. Andrew Street, Edinburgh.—
 Seeds.
 STUBBS & SONS, Reading.—Seed.
 THOMSON AND ROBINSON, Cathedral Street, Manchester.—
 Vegetable and Flower Seeds.
 TURNER & SONS, King Street, Covent Garden, London.—
 Daffodils, Spring Bulbs.
 ROBERT SYDENHAM, LTD., Tenby Street, Birmingham.
 Vegetable and Flower Seeds, Bulbs.

MARKETS.

COVENT GARDEN, December 29.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—EHS.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Azalea, white, per doz. bun.	6 0-7 0	Lilium lancifolium rubrum, per doz., long	2 0-2 6
Camellias, white, per doz.	2 0-2 6	— short ..	1 6 —
Carnations, per doz. blooms, best American varieties ..	2 6-4 0	Lily-of-the-Valley, per dozen bunches:	
— smaller, per doz. bunches		— extra special	30 0-36 0
— Carola (crimson), extra large ..	5 0-6 0	— special ..	21 0-24 0
— Malmesbury, per dozen blooms ..	—	— ordinary ..	—
— pink ..	10 0-15 0	Orchids, per doz.:	
Chrysanthemums, white, per doz. blooms ..	2 6-3 6	— Cattleya ..	12 0-15 0
— Red, per doz. bunches ..	15 0-18 0	— Cypripedium ..	2 0-3 6
— Yellow, per doz. blooms ..	2 0-3 6	— Odontoglossum crispum ..	4 0-5 0
— Bronze, per doz. blooms ..	2 0-3 0	Pelargonium, per doz. bunches, double-scarlet	8 0-10 0
— Pink, per doz. blooms ..	2 6-3 6	Poinsettia, per doz. blooms ..	10 0-15 0
— White, per doz. bunches ..	15 0-18 0	Richardia (Arums), per doz.	4 0-6 0
— Bronze, per doz. bunches ..	12 0-15 0	Roses, per dozen blooms	
— Pink, per doz. bunches ..	12 0-15 0	— Duchess of Wellington ..	—
— Yellow, per doz. bunches ..	10 0-15 0	— Lady Hillingdon ..	—
Daffodils, per doz. blooms ..	1 9-2 0	— Liberty ..	4 0-6 0
Eucharis, per doz.	2 6-3 0	— Madame A. Chabonay ..	4 0-6 0
Freesia, white, per doz. bun.	5 0-6 0	— Melody ..	—
Gardenias, per box of 15 and 18 blooms ..	7 0-9 0	— Mrs. Russell ..	—
Hyacinth, Roman, per doz. spikes ..	1 6-1 9	— My Maryland ..	3 0-3 6
Lapageria, per doz. blooms ..	—	— Niphetos ..	3 0-3 6
Lilac, white, per doz. sprays ..	4 0-4 6	— Princesse Bulgare ..	—
Lilium longiflorum, per doz., long ..	3 6-4 0	— Richmond ..	4 0-5 0
— short ..	3 6-4 0	— Sunburst ..	—
Lancifolium album, long ..	2 0-2 6	— White Crawford ..	3 0-4 0
— short ..	2 0-3 0	Spiraea, white, per doz. bun.	—
		Stock, double white, per doz. bunches	—
		Tuberose, per packet, 24 blooms ..	1 6 —
		Violets, per doz. bunches ..	3 0-3 6
		— double, Marie Louise, per doz. bun.	4 0-6 0
		— Princess of Wales ..	4 0-5 0
		White Heather, per doz. bun.	1 0 —

French and Guernsey Flowers.

	s.d.s.d.		s.d.s.d.
Marguerites, yellow, per doz. bunches ..	2 0-2 6	Ranunculus, Barb., red, per doz. bun.	8 0-9 0
Mimosas (Acacia), per doz. bun.	10 0-12 0	— Carmine ..	8 0-9 0
Narcissus, paper white, per pad	12 0-15 0	Safrano Roses, per packet, 24's	2 0-2 6
Soleil d'Or (Guernsey), per doz. bun.	6 0-8 0	Violets, Parma, large bun., each	5 0-6 0
— French, per pad ..	12 0-15 0	— single, per pad, 48-60's ..	8 0-10 0
		— per doz. ..	2 6 —

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches ..	7 0-8 0	Fern, French, per doz. bunches	0 6-0 8
Agrostis (Fair Grass), per doz. bunches	2 0-4 0	Galax leaves, green, per doz. bunches ..	—
Asparagus plumosus, long trails, per half dozen ..	1 6-2 0	Hardy foliage, various, per doz. bun.	4 0-8 0
— medium, doz. bunches	12 0-18 0	Honesty, per doz. bunches ..	10 0-12 0
Sprengeri ..	6 0-12 0	Lichen Moss, per doz. boxes ..	15 0-18 0
Berberis, per doz. bun.	4 0-5 0	Moss, gross bunches ..	7 0-8 0
Carnation foliage, doz. bunches	4 0-5 0	Myrtle, doz. bun. English ..	6 0 —
Croton foliage, doz. bunches	12 0-15 0	— French, per doz. bunches	1 0-1 3
Cycas leaves, per doz. ..	5 0-12 0	Pernetia, per doz. bunches	6 0-8 0
Eulalia japonica, per bunch ..	—	Smilax, per bun. of 6 trails ..	1 6-1 9

REMARKS.—The demand for cut flowers for the Christmas trade was quite a good one, or even better than

anticipated. The supplies were remarkably good, and prices remained high up to the close of the market on Christmas Eve. Roses, with the exception of red varieties, are more plentiful. Carnations are also increasing in numbers, but this has not appreciably lowered their value. Lily-of-the-Valley was cheaper than was expected, the supply being larger than usual. Scarlet Pelargoniums and scarlet and white Tulips were in good demand. Poinsettias were also popular; they are somewhat scarce. The small consignments of Daffodils were soon cleared at fancy prices. There were abundant supplies of Chrysanthemums, both double and single, of various sizes and bunched spray, white and coloured. All qualities sold freely. All foliage found a ready sale. Smilax started at 1s. 3d. and 1s. 6d. for six trails, and these prices were doubled before the end of the week. Arrivals of French flowers were very irregular, but most of them came to hand in good condition. Paper-white Narcissus and yellow Narcissus (Soleil d'Or), Parma Violets, Mimosa, yellow Marguerites, and scarlet Ranunculus were most in demand, but their non-arrival on Christmas Eve was very disappointing to the florists. White Freesia is now arriving from Guernsey in good condition.

Fruit: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Apples—		Dates, per doz. boxes ..	6 6-7 0
— Altham, per barrel ..	28 0-30 0	Grape Fruit, per case ..	12 0
— Californian, per box ..	7 0-8 0	Grapes: English, black, per lb.	0 10-2 0
— English cooking, per bus.	4 0-7 0	— Almeria, per bbl. of 60 lbs.	18 0-25 0
— Dessert, per bus.	3 0-6 0	— Canon Hall, per lb.	2 0-4 0
— Nova Scotian, per barrel ..	14 0-23 0	— Muscat, per lb.	2 0-4 0
— Oregon, ..	8 0-12 0	Lemons, per case	11 0-18 0
— Wensleydale, per case ..	11 0-13 0	Lychers, per box	1 4-1 6
Apricots, Cape ..	—	Melons, each ..	1 0-2 6
Bananas, bunch—		Nuts, Brazils, new, per cwt.	72 0-80 0
— Medium ..	7 6-10 0	— Coconuts, per 100 ..	21 0-24 0
— X-medium ..	9 0-12 0	— Messina cohs., per bag	40 0-44 0
— Extra ..	11 6-14 0	Oranges, per case	16 6-40 0
— Double X ..	12 6-16 0	— Seedless, per case ..	20 0-22 0
— Giant ..	15 0-18 0	Peaches, Cape ..	—
— Red, per ton	£20 0 —	Pears, per case ..	16 0-22 0
— Jamaica, per ton ..	£11 0 —	— stewing, per bus.	5 0-7 0
Chestnuts —		Walnuts, French, per bag	10 0-12 0
— Italian, per bag ..	20 0-25 0		
— Spanish, per bag ..	16 0-17 0		
Cobnuts, per lb.	0 6 —		
Cranberries, per case ..	14 0-15 0		

Vegetables: Average Wholesale Prices.

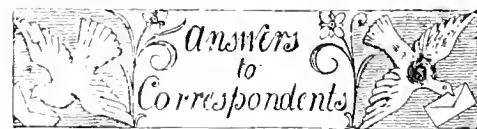
	s.d.s.d.		s.d.s.d.
Artichokes, Globe, per doz. ..	6 6-7 0	Mushrooms, cultivated, per lb.	1 0-2 0
Jerusalem, per bushel ..	2 6 —	— Buttons ..	1 0-2 0
Asparagus, Paris green ..	3 0-4 0	Mustard and Cress, per doz. punnets ..	0 10-1 0
Aubergines, per doz. ..	—	Onions, English, per bus.	7 0-8 0
Beetroot, per bus.	3 0 —	— Valencia, per case ..	12 6-13 0
Beans, Madeira, per bus.	2 6-3 0	Parsnips, per bus.	2 6 —
Brussels Sprouts, per bus.	2 6-3 0	Potatoes, new (Channel Islands), per lb.	0 10-1 0
Cabbage, per tally	3 0-4 0	Radishes, per doz. bun.	2 0 —
Carrots, per doz.	2 6-3 6	Rhubarb, forced, per doz.	1 6-2 0
Cauliflowers, per tally ..	2 0-8 0	Savoy, per tally	4 0-5 0
Celeriac, per doz.	2 6-3 0	Seakale, per doz. punnets ..	15 0-18 0
Celery, per fan ..	1 0-1 6	Shallots, per doz.	2 6-5 0
Chicory, per lb.	0 6 —	Spinach, per bus.	2 6 —
Cucumbers, per doz. ..	8 0-12 0	Tomatoes, English, per doz.	1 0-4 6
French Beans, per lb.	2 0-2 6	— Tenerife, per bundle ..	10 0-14 0
Garlic, per lb.	0 10-1 0	Turnips, per cwt.	3 0-3 6
Greens, per bag ..	1 0-1 6	Turnip Tops, per bus.	1 6 —
Herbs, per doz. bun.	2 0-6 0	Watercress, per doz. ..	0 6 —
Horseradish, per bundle ..	2 0-2 6		
Leeks, per doz.	3 0 —		
Lettuce, Cabbage and Cos, per doz. ..	1 0-6 0		

REMARKS.—Supplies of English and imported Apples are about equal to the demand. Pears consist chiefly of the imported Winter Nells, Doyenne du Commerce and Easter Beurre. There is a fairly good supply of grapes for the time of year. Nuts are sufficient for the demand. Certain forced vegetables are available, notably Asparagus, Peas, Beans, Potatoes, Cucumbers and Seakale. Mushrooms are also to be had. Good Onions and Potatoes are in demand. All other ordinary culinary vegetables are plentiful. E. H. R., Covent Garden, December 29, 1915.

Potatoes.

	s.d.s.d.		s.d.s.d.
Bedford—		Lincoln—	
King Edward ..	4 6-5 0	Eclipse ..	4 9-5 3
Blackland ..	4 3-4 6	Evergood ..	4 6-4 9
Dunbar ..	6 3-6 9	King Edward ..	4 9-5 3
Kent ..	—	Queen ..	5 0-5 3
Eclipse ..	4 6-5 3	Scotch—	
King Edward ..	5 0-5 3	King Edward ..	4 9-5 3
Queen ..	4 9-5 3		

REMARKS.—Trade is rather quiet this week, and arrivals are equal to the demand. Prices remain about the same. Edward J. Newbourn, Covent Garden and St. Pancras, December 29, 1915.



BEST BOOKS ON FRUIT CULTIVATION: W. E. J. Probably *Arboriculture fruitière*, by J. Vercier (Hachette et Cie.) (*Encyclopédie des Connaissances agricoles*), 3fr. 50, Paris, is the best work on fruit cultivation. We do not know of an English translation. No doubt palm-ettes will do well in the conditions you describe, but unless the whole of the wall has been covered, and the top is reached, the space is not being fully utilised.

BRICCOLI DISEASED: W. S. The plants are injured by the fungus *Ascochyta brassica*. Remove and burn all the injured leaves, and next season, when the plants are young, spray them with liver of sulphur.

NAMES OF FRUITS: *Builth*. 1, Bramley's Seedling; 2, Dredge's Fame.

NAMES OF PLANTS: *F. Noble*. 1, Petasites fragrans; 2, Pinus Laricio (Corsican Pine); 3, P. 1, var. nigricans (Austrian Pine).—*W. H.* 1, Elaeagnus pungens; 2, Viburnum odoratissimum; 3, Berberis vulgaris; 4, Ceanothus Veitchianus; 5, Elaeagnus umbellata; 6, Veronica speciosa var. Admiration; 7, V. speciosa var. Mme. Chrétien.

VINES NEGLECTED: *Long Spur*. You need not be concerned because the spurs of your Vines are 6 inches long. There are old Vines with spurs double that length which are still producing plenty of fruit of good quality. Some growers have succeeded after cutting off the spurs quite close to the old rod, and dormant buds have started from many parts of the stem where no bud was visible before, but much depends on the vitality of the Vines. At the best, no fruit can be expected on the shoots arising from these latent buds the same season as they are formed. We advise pruning back to one or two eyes of the young wood, and as the long spurs are objected to, you might train up new rods from the base if you can give them sufficient light. Ultimately the old rods may be removed entirely, cutting away only a part of the spur will not lead to success; it must be all or none.

VINES TO PLANT: *J. H., Sawston*. If you leave a space of 2 feet at each end of your 19 feet house you can plant one each of Black Alicante, Gros Maroc, and Appley Towers, and two of Muscat of Alexandria, at 3 feet 9 inches apart. The Muscats should be at the lighter end, or if there is no difference in this respect, one may be placed at each end. Gros Colman is not included, because the berries take longer to ripen than the varieties named. In the course of time you can remove the Muscats from the Lambhough house, as these two varieties are not suitable for growing together. With regard to the new border, a medium turfy loam is the best material for the bulk of it, and to this should be added bone-meal or steamed bone flour in the proportion of 1 cwt. to five loads, or cubic yards, of loam, half a load of old mortar, and two or three bushels of wood ashes or burnt garden refuse. Unless the loam contains a considerable quantity of grass roots, a little half-decayed stable manure may be added, not more than one bushel to the five loads. Two to two and a half feet is ample depth for the border. Due attention must be given to the drainage; if the situation is such as to need rubble under the border, some whole turves should be placed over it to prevent the soil from filtering through.

Communications Received.—H. E. D. (Thanks for 10s., which we have placed in R.G.O.F. box. The Pears have not yet reached us.)—E. B.—C. Bros.—E. M. E. M. C. H. H.—Lincoln Soc.—S. M.—D. M. C. R. A. S. O. E.—W. H. W.—P. A.—E. S.—T. T. A. H. C. B.—C. T. C.—E. R. J.—F. J.—J. C.—W. F. R.—T. W. R.—B. W.—A. O.—B. of T.—W. H.—

THE Gardeners' Chronicle

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THE MARKET FRUIT GARDEN.

PROBABLY the rainfall of December beats the record for that month in most parts of England. Certainly mine does so, and I have accounts of the daily fall for over twenty years, fifteen of which have related to my present place of residence. Rain was measured on twenty five days out of the thirty-one, and the total amounted to 8.13 inches. This is even worse than the twenty-three rain days and the total of 7.68 inches recorded for December, 1914. The amount is more than three times the average for December. The totals for the year are 137 rain days and 36½ inches exactly, the latter being the greatest in fifteen years, excepting 37.16 inches for 1903. The average for the fourteen years ended with 1914 was 31.68 inches. The hindrance to work has been very serious. The little planting that there was to do was mainly done before the land became sodden; but digging, of which a large acreage is to be done, has not been begun, while pruning has been much hindered. Moreover, there is every reason to fear a serious spread of fungous diseases, particularly brown rot, as there was after the wet winter of 1914-15. Some trucks of London manure had to be placed in a heap, instead of being carted directly from the railway station into the orchards for which it was intended, the land having been far too wet for carting upon it. Wages have been largely wasted, in consequence of profitable work for men under cover being lacking.

THE PAST YEAR.

Financial results for 1915 among fruit-growers will vary greatly. Those who had a good Plum crop for the most part

will be able to show a profitable balance sheet. As my Plum crop was nearly a failure, my returns for fruit, when late-keeping Apples have been sold, will be but little over two-thirds of the total for fruit grown in 1914, when there were excellent crops of Plums, Apples, and Black Currants. Better prices for Apples and Black Currants made the returns for those fruits satisfactory, in spite of the great proportion of tail among the former; and Cob Nuts did well; but the great deficiency in the receipts for Plums much more than outweighed these advantages. The great misfortune of 1914 was the worst attack of the aphid ever known. But for that pest, the Apple crop would have been much above the average. It was accountable for the largest proportion of "scrumps" I ever experienced.

SIGNS OF BROWN ROT.

Withered leaves clinging strongly to the twigs of most varieties of Plums, and some sorts of Apples, indicate incipient brown rot from infection last summer. The affected twigs should be cut back to sound wood, the cuttings being placed in a bag for burning. The mummified fruits showing to some extent, are results of older infection. They should be burnt. Unfortunately, where labour is short, as it is in most parts of the country, much necessary work may be neglected.

A POSSIBLE NECESSITY.

In the event of labour continuing short after the war it is possible that many fruit-growers who at present grow Apples on arable land will be constrained to let those orchards from which bush fruits have been grubbed be covered with grass or some other herbage. The too common plan is to leave the land to cover itself with grasses and weeds. It would be far preferable, however, to get the land clean, if possible, before the end of April, and then to sow it with Perennial Clovers or Lucerne. Wild grasses would spring up, no doubt; but the leguminous herbage might be kept in flourishing condition by the judicious use of a little artificial manure occasionally. This, cut at least twice in a season, and left to rot on the ground, would be a great agent of fertility, and possibly might balance the disadvantage of ceasing to cultivate the land. Swapping the herbage off twice in a season would occupy less time and cost less than hoeing and digging. My own intention is to try Lucerne on at least a part of one orchard now under cultivation. With this crop there would be a great accumulation of nitrogenous mulch in the course of a few years, superseding the expense of periodical manuring, except for occasional limings.

There is the possible alternative of using a motor-cultivator, in the event of a satisfactory one at a moderate price being introduced. At present, if memory serves, there is not such a cultivator for sale at less than £150, and I have never seen one

at work in a fruit plantation. At such a price, there would be no economy in expenditure for two or three years. Besides, there would be a width of three to four feet in each of the rows of trees untouched by the cultivator, and needing to be hoed by hand several times in a season. This would be one-third to one-fourth of the total space where the rows of trees are only 12 feet apart, or about one-fourth where they are 15 feet to 16 feet apart. A cultivator to go between fruit trees should be low enough in height to pass under the lowest branches. As for a motor plough, it seems to me that ploughing in orchards of such shallow-rooting trees as are commonly grown in English orchards would be objectionable. Even if the ploughing could be done fleetly enough to avoid cutting the roots of the trees, the land would require cultivating or harrowing after the ploughing, to pulverise the surface soil in order to protect the land from drought. Lastly, motor-cultivation would not supersede the necessity of a heavy periodical outlay for farmyard or town manure and of labour in putting it on the land and spreading it. Artificial manures, unless such organic varieties as guano be called artificial, have no decided effect upon fruit trees in my orchards. This conclusion has been forced upon me after using what are called complete dressings of these fertilisers for many years. A dressing which doubles a crop of Potatoes in my soil does not distinctly affect the growth of fruit trees, as compared with that of test trees left unmanured; whereas great improvement has resulted from the use of farmyard or town manure.

SPURRING PLUMS.

The pruning of Plums this season has recalled to mind a statement made by an authority on fruit growing to the effect that it is of no use to spur Plums. The statement surprised me at the time when it was published, and observations show that it was a mistaken one. Fruit buds have formed on the great majority of the slender laterals spurred last season. As a rule, they are not developed on gross laterals cut back to four or five buds from their bases, either in the case of a Plum tree or in that of an Apple tree, wood growth being forced instead. Gross laterals, not wanted for extension growth, are best cut entirely off their branches, unless there is room for leaving them at least a foot long, in which case they are likely to produce some fruit buds.

ARRESTED GROWTH IN PLUMS.

A striking illustration of the danger of allowing early fruiting to a considerable extent is afforded by the condition of some Plum trees of the variety President. They were remarkably fine maidens when planted in the autumn of 1911. They grew splendidly, and were exceptionally well furnished trees for their age in 1914, when they produced good crops of fruit. It was supposed that they were quite strong enough to bear the crops without injury, and, indeed,

that they needed to fruit well in order to check the tendency to excessive growth. Events proved that this was a mistake, for, although they bore no fruit in 1915, they made no substantial growth, except at the tops, where it was not wanted, because the trees were quite tall enough, and because the rampant top growth robbed the lower branches of a fair share of nutriment. In the autumn of 1914 some of the upper growths were cut back to stems containing only latent buds, in the hope that these would break, and thus furnish the trees near the middle of their height. With Apples this plan would have been largely successful, but with the Plums it proved mainly a failure, for most of the bald-looking shoots have died back to the main branches. The trees have just been pruned again, and liberally manured, the pruning being severe, at the cost of losing much prospective fruit, in order to promote the utmost growth of fresh wood in the coming season.

SCAB ON APPLE WOOD

One of the undesirable legacies of the wet winter of 1914-15 is the appearance of scab on the wood of some varieties of Apples which have never shown it before. The prescribed remedy is spraying during the winter with 6 lb. of copper sulphate alone to 100 gallons of water. It is doubtful, however, whether the fungicide would stick on the shoots long enough to be effective, and a safer plan is to cut them below the infected portions, burning the cuttings. Previously scab has been hardly ever found on the wood of any other variety than Cox's Orange Pippin.

EXPERIMENTS WITH LIME WASH.

As it is my intention to spray Apples and Plums not liable to have their buds eaten by birds with lime alone, instead of lime-sulphur, some preliminary experiments are about to be made in order to ascertain whether the addition of a little Portland cement or builders' size to the lime wash will make it stick on the trees better than it does when used alone. Probably the work will have been done before these notes are published. Lime-sulphur sticks on much better than lime, but the same materials will be tried with that spray-fluid, to increase its power of preventing bud-eating by birds. Equal portions of three adjoining rows of Apples of the same age and variety will be used for the lime trial. The first row will be thoroughly sprayed with a wash composed of 19 lb. of the best lime and 1 lb. of Portland cement to 10 gallons of water; the second with the lime alone; and the third with the lime and 2 lb. of size, which is in the form of a stiff paste. Three other parts of adjacent rows will be devoted to the trial of lime-sulphur of winter strength, with the same proportions of cement and size respectively, one row getting lime-sulphur only. There will be ample time for ascertaining the results of the experiments before the regular spraying will be begun, which will not be until the buds are upon the point of bursting. I am afraid to use a larger proportion of cement, lest it should set in the sprayers. The size is such as is used in string and rope factories, and costs me 12s. per cwt. The lime wash, it will be seen, will be thick. Many persons use only 1 cwt. of lime to 100 gallons of water, whereas I shall use 190 lb., or nearly 13½ cwt., with that quantity of water. In 1914 lime spraying was carried out extensively in my orchards, but rain followed nearly every day's work, and in a week hardly any lime was left on the trees.

BIRDS AND BUDS.

Up to the time of writing bud-eating by birds has not been begun on Plums. But the trees need to be inspected at least twice a week, in order to spray immediately after the beginning of an attack. Occasionally there is a season of exemption from this damage. Greengages, other Dessert Plums, and the variety Monarch are the only varieties in my orchards which birds injure materially. *A Southern Grower.*

DAHLIA IMPERIALIS.

DAHLIA IMPERIALIS is a native of Mexico, and the largest and the finest species of the genus. It is said by M. Baltet, in his book, *Chrysanthème et Dahlia*, to have been introduced by Benedict Roezl, who sent it to Messrs. Vilmorin, in 1860, but to have flowered for the first time in Europe, in November, 1869, in the Royal Horticultural Society's Gardens, Chiswick, and then in 1871 in the "Fleuriste de la ville de Paris."

Since that time the plant has been in cultivation, but owing to its large size and to its late flowering habit, it is a rare plant in northern countries.



FIG. 5.—DAHLIA IMPERIALIS IN M. DE VILMORIN'S CONSERVATORY AT VERRIÈRES.

Only in the south of France, and especially in the Riviera, can it be grown and flowered in the open garden, and there only, when planted out, in rich and fresh soil, can it show all its magnificence.

The stem, which may become as big as one's wrist, is furnished with very large, opposite, bipinnate or tripinnate and wide-spreading leaves; it grows 10-15 feet high, and bears panicles sometimes 3 feet long, of some 50 or more drooping florets, 4 in. long, sharp pointed, and practically white, being very slightly tinged with pink, a little darker at the base; the ray-florets are bright yellow. The root stock is

about the same as in ordinary Dahlias, but the tubers are much larger and longer.

In M. de Vilmorin's gardens at Verrières, near Paris, *Dahlia imperialis* is grown for the conservatory, and one of the plants is illustrated in fig. 5. Indoor plants flower at the beginning of December. The plants at Verrières are propagated from cuttings inserted in spring, in the same manner as the common garden Dahlias, but they are longer in rooting; the more tender they are the better. The cuttings should be taken with a good heel, and placed in bottom heat. If well grown afterwards, the plants from these cuttings will flower the same season, but as they do not make such big plants as older ones, it is best to grow them in summer in rather small pots, as stock for the following year. In winter the plants are rested in their pots, and started again in spring. When the young shoots begin to develop, the old soil is shaken from the tubers, and the plants are first potted in medium sized pots, filled with rich loamy soil; only one to three shoots are retained on each plant. Until the beginning of June the plants should be grown in a cold frame or greenhouse, in full exposure to sunshine, near the roof-glass.

At this stage they should be shifted into very large pots, or, better, into tubs, not smaller than one foot across. The larger the receptacles the bigger and finer the plants will become, as they are gross feeders. They should then be stood out-of-doors, in a hot, sunny corner, well protected from strong winds, and the tubs buried over their edges to allow the roots to enter the ground. A good mulch of manure, and frequent waterings in hot weather, sometimes with liquid manure, are all the attention the plants need until the autumn.

The main shoot should be pinched when it is one or two feet high, in order that it may develop side shoots. Some time in September the roots that have grown over the top of the tubs should be severed to prepare the plants for removal to their winter quarters before frosts occur. They may be placed in any glass structure that is frost-proof, although a little fire-heat is an advantage. The plants should be afforded frequent waterings and liquid manure until the buds begin to expand.

The flowers will begin to appear early in December, and last until Christmas or the New Year. Then the stem should be cut down and the plants kept quite dry, to be started again in spring either to flower or to furnish cuttings. *S. Mottet, Paris.*

ORCHID NOTES AND CLEANINGS.

CYPRIPEDIUM CYCLOPS.

A FINE flower of this noble *Cypripedium* raised at Westonbirt is sent us by Mr. H. G. Alexander, and it is difficult to conceive an improvement on it in its section. The parents are *C. Actaeus* × *C. fulshawense*. The dorsal sepal, which is more than three inches across, is white with an emerald green base, on which are large purple-brown blotches changing to smaller rose spotting towards the white, upper half. The petals are 1½ inch wide by 2¼ long; both petals and lip are tinged and marked with red brown on a yellow ground.

CYPRIPEDIUM VIKING.

MR. ALEXANDER also sends flowers of *Cypripedium Viking* (*C. Buchananianum* × *C. illustre*), in which the dorsal sepal is white with a median band and side lines of vinous purple. The petals and lip are light yellow, the petals having a line of dark purple up the middle, the upper halves being tinged with light brown. Both the plants have received the R.H.S. Award of Merit.

MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.*

XXIV.—CHEBSON ABBEY.

At last we had done our preliminary work in the Halls of Heaven, and reluctantly bade au revoir to that delectable corner of friendliness and peace, escorted out (for it was after church time) by a crowd of monks and jolly little rogues of novices in crested mitres almost as big as themselves. Vegetation was now getting on; already the *Lloydia* was growing dingy in the rocks, and the *Androsace* weeping for its end with a blurred eye of blood-crimson. The plain suddenly yielded us a new *Primula*, glowing chalkily and fiercely pink along the fine lawns that edge the water courses. It was *P. sibirica*, round-faced, fat and cheery-looking, with its little scarios, baggy tails at the base of its bracts; but it was *sibirica* in a quite different form from the lush and stalwart great *sibiricas* that I appreciatively nurse at home. For this form, general in the damp, grassy plains of the Da Tung Alps, is especially neat and dainty, not more than 4-6 inches high, springing from a neat tuft of small, stiff leaves, with something gay and gallant about its neat scale, sturdy uprightness, and the jovial flat stare of its vividly pink face. But it cannot beat the new *P. acclamata* of last year. (How just a name!)

The way is difficult and very far, nor were there yet any fresh flowers, unless you count a pale, greenish *Clematis*, suggestive of *C. cirrhosa*, which may or may not be *C. atragenoides*, not striking in bloom, but pleasantly sweet of breath. For two days, up and down, one traverses the breadth of the Da Tung Alps, from the Halls of Heaven on their northern margin, to Chebson Abbey, far out beyond their southern boundary. It is with a sinking of the heart, indeed, that one emerges from the Alps upon fat cultivated land again, making away from the snows, over river-plain after river-plain descending from them, till at last, across the biggest plain of all, one arrives at Chebson Abbey. From the Russian accounts, and from the enthusiasm of great botanists at home and abroad, Purdom and I had both imagined we should find Chebson Abbey embedded in the most magnificent and immemorial forests crowded with exciting trees and shrubs. Not a bit of it. There are not, and there never have been, any forests round Chebson Abbey, or anywhere in its neighbourhood. Chebson Abbey sits in a hollow of enormous, rolling downs, as naked and green as any in Wiltshire. Behind it, on the warm slope, huddles a small copse of Cypress, while on its cool north-westerly protecting hill each fold nurses a miserable Spruce wood, filled with a thorny Gooseberry for an undergrowth. A mile or two below the plain there rise big isolated fell-masses, indeed, that in their isolation offer promise; but though their lower slopes are peppered with poor, sparse Spruce, not the wildest enthusiasm could describe this as forest.

Nevertheless, Chebson is a stately and splendid place, very different from the popular and busily devout Halls of Heaven, for Chebson is a very rich and exclusive community, small and select as a German Chapter, admitting only the "best" people, each of whom lives apart in a comfortable, low, white house, and does not disturb the noble and gorgeous churches with anything like the three or four daily services that proceed at Tien Tang Ssu. Its atmosphere, indeed, is spacious and opulent and leisurely, standing to Tien Tang Ssu's as a great Oxford college's might stand to that of a busy, crowded parish. It is all done at Chebson on the grand scale. The guest-cloisters are ample,

solid, tranquil and splendid; few noises break the comfortable calm, and rarely do the resident prelates pervade the sleepy streets and alleyways of whitewashed walls. All around the downs are of loess and occupied largely by the *Hyacinthine Iris* accordingly. But here there is also an admixture of a different and more friable loam; so here there duly springs to birth a new *Iris* (see fig. 6).

This occurs, not very commonly, in small colonies or in isolated tufts in the turf of the downs, not developing into big masses like its *hyacinthine* rival. It is a beautiful thing, with large and rather spidery flowers appearing amid the very narrow leaves, acute and glaucous, that usually overtop them. Though the styles and standards have more lilac than the fall, it may be said that the whole blossom is keyed in that rich sapphire tone which one gets in good forms of *I. sibirica*, the fall being densely veined and flushed on a central ground of white, down the middle of which is a flame of greenish-yellow. The pollen is of a brickly orange, but the special peculiarity of the plant is yet to be noted, for

general throughout these Alps. The only other notable occupant of the cool slopes is *Primula tangutica*, and *P. tangutica* is so really frightful that I can hardly bear to look at it, more especially as it here completely usurps the place of *P. Maximowiczii*, which I had so much hoped to see this season in its gorgeous blossom. *P. tangutica* is wholly contemptible: rank and cabbage in growth, mean and squirmy in flower, muddy and morbid in colour, even when you get the very best forms, where the livid greenish-yellow of the starved-looking star stands in good contrast to the mahogany-crimson of the tube. Chebson, in fact, is too far from the mountains to offer a good flora; the Alps lie some eight miles behind it at the top of the great plain. At present their folds and gullies have nothing to show, but later on I may find an ampler tale to tell. Three *Meconopsids*, I know, are there, and in one of them, spinous and horrid, I believe we shall see the true *M. racemosa* at last—deep blue in the flower, and orange coloured in the pollen, and short in the style, for the original described specimen of *M. racemosa* is dated from



(Photograph by Reginald Farrer.)

FIG. 6.—MR. REGINALD FARRER'S EXPLORATIONS: *IRIS* SP. (*HYPOGAEA*) AT CHEBSON

it deserves, indeed, if the name were not Latin and invalidated by misapplication, to be the one and only *I. stylosa*. Though the flowers may stand up often as much as 8 inches, yet the whole length of that apparent stem is mere style, and the ovary, at flowering time, is actually underground, on a scape about one-eighth of an inch long. The flowers have little scent, and appear in no ungenerous number. I should judge that *I. sp. "hypogaea"* ought in cultivation to be as accommodating as it is attractive, if good food be provided for the hungry, wiry mass of roots, excessive in proportion to the slender clump of leaves and blossoms.

Otherwise, the vicinity of Chebson offers as yet but little of interest; nor, indeed, do I think it will ever offer more. The Spruce copse above the Abbey is full of the azure-blue *Corydalis*, however, peering amid the scrub of *Potentilla fruticosa* in dabs of colour as intense as that of *Scilla bifolia*. It is certainly a most beautiful thing, and I do trust that this year I may be successful in obtaining it, as it seems

Chebson Abbey, and I have little doubt, accordingly, that *M. racemosa* will be the prevalent or sole spinous Poppy of these parts. *Reginald Farrer.*

DEEP CULTIVATION AND FOOD SUPPLY.

(Continued from p. 2.)

DRAINING and liming are valuable auxiliary forces to be brought into use in order to effect improvement in the working of clayey or heavy land, but alone they cannot create that physical condition of the surface soil which makes for rapidity of growth, and permits of early sowing and planting, and of a close succession of crops. That condition can only be obtained by making a liberal use of organic manure and more or less deep working.

Where the use of stable manure has to be curtailed on account of the cost or of difficulty in obtaining supplies, and the quantity of leaf soil is limited, spent hops, road grit, sand, the softer

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 31, November 14 and 28, 1914, January 2, February 27, March 20, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 10, November 13, 20 and 27, and December 11 and 25, 1915.

refuse of the brickyard, soot, and the refuse of crops free from disease, are all helpful in effecting improvement in the texture of heavy soil. Unfortunately, the cost of cartage deters many from using such materials. There appears to be some prejudice against the use of sweepings from tarred roads, although from experience I fail to discover the reason. It is true the sweepings I have used had been lying in heaps some time before being wheeled out upon the land, but the effect in the case of the two crops, Strawberries and Onions, to which they were applied was distinctly beneficial.

To summarise, I would say, where expense has to be considered, and an early return for money spent is expected, first concentrate attention on the upper layer of soil in so far as the addition of foreign material is concerned. Then when the condition of the top spit is satisfactory, some of the available material may be used in a manner calculated to improve the condition of the sub-soil. In the meantime, make a point of moving the sub-soil of at least a portion of the land each year with the fork or sub-soil plough. In addition it would be well to introduce pig breeding or pig-keeping, where the art is understood, and the regulations are not too onerous, with the view of utilising to the fullest extent the refuse of garden crops, and at the same time of increasing the supply of organic manure.

The unimpeded passage of the soil water—the result of drainage, soil disturbance, and the incorporation of opening material—will gradually remove the most objectionable of the finer particles of soil. It is to the presence of these that we may attribute a good deal of the difficulty in working, and to them also we may ascribe the relative infertility of unmoved clay soils. The free access of air following accelerated and extended percolation will, in turn, promote the processes of oxidation and decomposition at a more rapid rate, and, as a further consequence, the soil will become coarser-grained, richer in available plant food, and more capable of absorbing and accumulating heat near the surface. Saturating a part at the surface will rarely be reached, even in a wet period; and in a period of drought, the free upward movement of soil water, due to increased capillary action, will enable the crop to draw more readily on the reserve of moisture held in the lower layer of soil.

As a final consequence the land will be more easily worked, and opportunities for working will become more frequent; earlier sowing and earlier planting will be made possible; growth will be more rapid; crops will require less time in which to mature; therefore a greater number can be taken from the ground.

COST OF WORKING

A few years ago we commenced an experiment with seven plots of land of 4 poles each, with a view of ascertaining how much could profitably be spent in deep cultivation.

The soil was a heavy loam over London clay of a very stubborn type. In places the sub-soil was a thin layer of loam of the character of a brick earth. In others the 8 or 9 inches of darkened soil was resting on the clay.

The land had been cultivated with the plough, but the sub-soil had never been moved, and a spade could not be driven down the depth of the blade without striking on the hard plough pan. No stable or farm manure had been applied for several seasons, and in the preparation of the plots, mixed farm manure was used at the rate of two loads to each 4 pole plot, or eighty loads to the acre.

Plot 1 was dug in the ordinary fashion; that is, as deeply as the tines of the fork would allow. The cost of the work approximated 6d. per pole.

Plot No. 2 was dug two spits deep. The "crumb" left behind the first spit was thrown out by the shovel and fork on the surface. Some of the plough pan was unavoidably thrown out with the crumb in order that the top spit might

be moved to the required depth. The sub-soil was moved as deeply as the fork permitted, but the soil was kept in its order of position. The manure was buried one spit deep.

Plot No. 3 was treated in a similar fashion, except that the manure was buried beneath the crumb 3 or 4 inches beneath the surface.

The cost of the work on these plots was approximately 2s. 6d. per pole. The cost of distributing the manure on the plots is not included in the cost of the work.

Plot No. 4 was over-hand trenched; that is, the soil was moved three spits deep, the bottom spit remaining in its original position, the top soil was kept in its order of position. The manure was buried one spit deep.

Plot 5 was treated similarly, but the manure was placed beneath the crumb. The cost of the work was just over 6s. per pole.

Plot No. 6 was trenched three spits deep, the two nearest the top being inverted, and therefore the clay was brought to the surface. The manure was buried one spit deep.

Plot No. 7 was trenched in the same way, but the manure was buried 3-4 inches beneath the surface.

The lower layers on these plots were very stiff, and although the work was done in spring, it was a difficult matter to remove the clay from the tines of the fork. The cost was 6s. 6d. per pole. The work was done throughout by the same men. Each plot was a pole wide and a chain long.

The crops were Potatoes, Cabbage, Celery, Onions, and Cabbage, in the order given.

The Potatoes were maincrop varieties, and were planted 15 inches apart, 30 inches between the rows. The Cabbage plants were put out in late September, and were spaced 18 inches by 15 inches. The Celery was planted from boxes in June in double rows. Three trenches were made down each plot, and two loads of fresh stable manure placed in the trenches on each plot, 14 loads in all, at 6s. per load.

After the Celery was cleared the ground was forked over, then in March harrowed and raked down in preparation for Onions, which were raised from seeds, sown in boxes in the last week in January. The Onion plants were put out in late April and early May, in double rows 3 inches apart each way, and 15 inches from the centre to centre of each pair of rows. Owing to adverse weather conditions during the whole time the planting of the Onions was in progress, the tilth was destroyed, and a considerable number of plants failed to grow until after the crop had been cleared in the autumn. In October the number of young Onion plants on the ground was greater than the number of bulbs in the storeroom. In early autumn the ground was dug over with the forks and a light dressing of decayed manure was applied to the surface, and then in April of the year following Onions were again planted in a similar fashion. In September the plots were hoed and a tilth created with the horse cultivator, and in early October Cabbage was again planted at the same distance as before, namely, 15 inches by 18 inches. This latter distance is not sufficient to allow the use of the horse hoe; I believe it would be better to plant 12 inches by 22 or 24 inches. I think, too, with regard to the Celery, that triple rows of dwarf sorts are better than double rows of taller varieties. The return is certainly greater, and the labour in earthing considerably less. *F. G. Drew, University College, Reading.*

(To be concluded.)

NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopenny, and thereafter at the rate of 1d. every two ounces.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

VINES.—Retain a sufficient number of vine eyes when pruning for purposes of propagation where the renewal of old vines or the planting of new vineries is contemplated. The "eyes" may be rooted in small pots or in pieces of turf in a temperature of 60° to 65°. Unless a suitable house is available to grow the plants on without a check, it is best to defer the rooting of the "eyes" for a month or six weeks, when the days will be longer and growth more rapid. There would still be plenty of time to have the young vines in readiness for planting in May and June. In the meantime, tie the prunings selected for the purpose in bundles and partly bury them in the ground to keep the buds plump.

CUCUMBERS.—Pay careful attention to these plants. Crop lightly, train the shoots thinly, and top-dress the roots with light, rich compost from time to time. Sow fresh seeds to raise plants for succession. Plunge the seed pots in a bottom heat of 80°, but when the seedlings are well through the soil stand them near the roof-glass in a house with a moist atmosphere and a temperature of 70°. Get everything in readiness for planting; prepare the soil, and if necessary thoroughly cleanse and paint the pit.

MELONS.—Where sufficiently heated pits are available, a few Melon seeds of early fruiting varieties may be sown singly in small pots. Treat the seedlings as recommended for Cucumbers. These early plants are best grown in 12-inch pots.

GENERAL REMARKS.—The cleansing of the trees and houses should be completed at the earliest opportunity. Coat the walls with hot lime mixed with a good handful of flowers of sulphur to each pailful. Houses which are not yet started should be kept as cool as possible in order that the plants may have a thorough rest. Get in readiness a large heap of leaves for mixing with stable litter later to form hot-beds for Melons and Cucumbers. Turf should also be cut and stacked, mixing a sprinkling of freshly-slaked lime between each layer of turves.

THE ORCHID HOUSES.

By T. W. BRISCOM, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

ZYGOCOLAX.—These Orchids are hybrids between Colax and Zygopetalum, and embrace *Z.-c. Amesianus*, *Z.-c. Charlesworthii*, *Z.-c.opardians*, *Z.-c. Veitchii*, and *Z.-c. Wiganianus*. They are of easy cultivation, and require much the same treatment as Zygopetalums. Repotting should be done when roots are about to develop from the new growths. The plants should be grown in the intermediate house, and watched closely for thrips. A little Sphagnum-moss may be added to the last layer of the compost.

PLEIONES.—The Pleiones are often known as Indian Crocuses. They flower during November, and, in a dry house, the blooms remain fresh for a long time. The flower-stems are rather short, and if the blossoms are required for use as button-holes they should be gently pulled with the thumb and finger from the young growth to secure a greater length of stalk. Soon after the flowers are removed new roots develop at the base of the young growth, and at this period repotting should be done. Remove the plants from their pots, and shake away the greater portion of the old soil. Some growers separate the pseudo-bulbs, whilst others retain them in clumps of a dozen or so to prevent injury to the roots; if the work is done carefully the former method is the better. Pleiones succeed in either pots or pans, which should be filled one-third of their depth with drainage material. Pans are preferable if it be desired to grow the plants near to the roof-glass. The soil should consist

of the best fibrous loam, peat or Osmunda-fibre, and Sphagnum-moss in equal parts, with the addition of a sprinkling of coarse, silver sand. The materials should be well mixed. Place several pseudo-bulbs in a single pan; as a rule, ten of average size are sufficient for a receptacle 6 inches in diameter. The smaller pseudo-bulbs should be potted by themselves, placing a few more in each pan than the larger ones. Press the compost moderately firm, and arrange it slightly higher in the centre of the pot than the sides. After they are repotted, place the plants on a shelf in the intermediate house, or, if this is not available, stand each specimen on an inverted flower-pot, for these Orchids need plenty of light at this season. Drought at the roots for any great length of time is harmful, but for a few weeks after potting water should be applied only sparingly. At a later stage copious supplies of moisture should be afforded the roots, and until the pseudo-bulbs are fully matured. On warm, bright days, and during the spring and summer, light sprayings overhead are beneficial, serving not only to favour growth, but hold in check and prevent attacks of red spider. Proper attention must be paid to ventilation; if a little air is admitted, and especially through the top ventilators, on all favourable occasions, the pseudo-bulbs will retain their foliage late in the season to the plant's benefit. When the growth of the pseudo-bulbs is nearly completed, the leaves will commence to decay. At that stage the plants should be removed to another house where the atmosphere is fairly dry, and placed in full sunshine. An early viney, where the Grapes have been gathered, is suitable, but water is still needed. When growth begins afresh, place the plants in a few degrees more warmth, so that the flower-buds may develop. The above remarks apply to *P. Wallichii*, *P. maculata*, *P. praecox*, and *P. lagenaria*. *P. humilis* and *P. Hookeriana* flower later, and should not be disturbed until the spring, when the cultural directions given for *P. maculata* and the others should be followed.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

LATE PEARS.—Although there are not so many good late Pears as Apples, a supply of these fruits can be maintained fairly late in the season by planting such varieties as Le Loeuier, Marie Benoist, Winter Nellis, Olivier de Serres, Blackling and Nouvelle Fulvie. Much of the shrivelling of late varieties of both Apples and Pears is due to gathering the fruits too early, and storing them in dry places. They should be allowed to hang on the trees till the latest possible date. There is no need to fear any ill effects from a little frost.

THE ORCHARD.—Through the continued wet weather, it has been almost impossible to work heavy soils in the ordinary fruit quarters, but at such times very useful work can be carried out in orchards, and especially established orchards laid down to grass. From what I have seen in most parts of the country orchard trees are much neglected in the routine work of pruning and spraying, and the results of such neglect are crops of undersized and scabby Apples and Pears. Where the trees are healthy and vigorous, but overcrowded with growth, the time spent on pruning and spraying will be amply repaid the first season, but when an orchard has been neglected for a long period it will be a second season before the full benefits of the work are seen, although eventually the labour will be well repaid. In neglected orchards a start should be made by grubbing up any worthless trees; others that are fairly healthy in growth, but of inferior quality, should be headed down and grafted in the spring with better varieties. The remaining trees—that is, those of sufficient merit to be worth retaining—should be well thinned in the centres, cutting out all weak and badly placed shoots, and retaining only a moderate number of clean and healthy growths. Thoroughly thin the remainder of the branches, first cutting out those that cross each other, for overcrowding of the shoots is the commonest of all evils in or-

chards. All prunings, dead wood, and rubbish should be burnt, and the ashes mixed with soil as a top-dressing for the roots. If the trees are unhealthy, and are making little or no growth, the turf should be stripped off the roots for at least as far as the outside spread of branches. Fork the ground lightly, and then apply a top-dressing of soil mixed with a goodly proportion of wood ash and lime, finishing off with a thick mulching of manure. If manure-water from the farmyard is available, this will be of great value in assisting the trees to make healthy growth, for if this is not maintained the trees will eventually fall into a sickly condition.

THE FLOWER GARDEN

By WILLIAM F. ROWLES, Gardener to Major Howell, Ellisheld Manor, Basingstoke, Hampshire.

TALL PLANTS FOR SUMMER BEDDING.—In what may be termed the modern system of bedding tall plants are freely used, including Ivy-leaved Pelargoniums, Heliotropes, Calceolarias, Amplexicaulis, Marguerites, Chrysanthemum anethifolium, Plumbeago capensis, Swainsonia, Streptosolen Jamesonii, Fuchsias, and Zonal Pelargoniums. It is not possible to produce sufficiently large plants of these from propagation this year, but the grower who intends their use will already have most of them in 5 or 6 inch pots. Most of them are best planted from 6 or 7-inch pots. Ivy-leaved Pelargoniums should be trained as columns 4 feet high without disbudding. The others grown as standards will need to have the side growths pulled out until they have a clear stem of 3 feet. These tall plants greatly enhance the bedding scheme; they relieve the flatness and advertise their beauties from a greater distance, thus rendering the garden more attractive.

POTTING BEDDING PLANTS. Cuttings of Zonal and Ivy-leaved Pelargoniums which were rooted in boxes in the autumn should be potted into 3-inch pots. There is no advantage in crooking the pots for plants of this nature, which will be so short a time in these small receptacles. Nor is there any real need to wash the insides of the pots. Some may not agree with this, but I hold that the labour involved in washing is not compensated by the slight advantage gained. If the pots are thoroughly dried over the boiler, or the hot water pipes, or in a warm shed, it will be quite sufficient to brush them out and drain them with a few leaves. Gardeners with depleted staffs will agree that small economies like this have now to be considered. The soil from old Chrysanthemum stools may, with a few additions, be made into a suitable compost for these plants. The practice which obtains in the North of England and in Scotland of enclosing the roots in a ball of soil and moss tied with raffia and then putting them back in boxes is a valuable method, when pots are not available, of ensuring that the plants will transplant well when they are put into the beds in summer. My reason in advising that the potting be done now is that it affords an opportunity later of shifting them into 5-inch pots, thus obtaining larger specimens, and justifying wider planting in the summer.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

THE FORCING HOUSE.—Batches of Azalea mollis, Prunus triloba, Pyrus floribunda, Lilacs, and other forcing shrubs may be placed into heat as required. It is wise to have these subjects in flower early enough to allow them to be hardened a little before placing them in their flowering quarters. They will then last in flower for a much longer period than if they were taken straight from the forcing house. Batches of forcing bulbs must also be placed in heat at regular intervals. When large quantities of Lily-of-the-Valley are required for cutting, clumps may be dug up from out-of-doors, and planted in a hotbed in a heated pit. Give them a thorough soaking with lukewarm water, and cover the glass with mats till the flower-spikes are four or five inches high. Then gradually inure them to the light.

RICHARDIA AFRICANA.—Callas are gross-feeding subjects; and as the pots are now full of roots, stimulants must be afforded the roots. Some of the strongest plants may be placed in a warmer house, where they will quickly throw up their flowers. The plants are subject to attacks of green fly, and must be fumigated occasionally.

BEGONIA GLOIRE DE LORRAINE.—It is not unusual for this Begonia to fail to produce a suitable number of shoots for cuttings. This may be caused through not allowing the plants a period of rest after they have flowered. Before placing the plants in heat to make new growth they should be grown in a temperature of about 59° for two or three weeks, affording water sparingly. At the end of this period shorten the shoots and bring the plants into a warm, moist house. Spray them with tepid rain water twice daily, but water the roots with great care, for should the soil become excessively wet there is a danger of the plants dying. When cuttings are available they may be dibbled into pans filled with fine sand and placed in a propagating case. This Begonia may also be readily propagated from leaves, but this method should only be adopted when cuttings are scarce, as cuttings are the more satisfactory. Those that grow from the base of the plant are to be preferred.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. Lord North, Wootton Abbey, Banbury, Oxfordshire.

TRENCHING AND DIGGING.—Endeavour to cultivate every available part of the kitchen garden this season, and to this end—labour permitting—thorough trenching should be practised. Many gardeners will, perforce, have to perform this essential work in great difficulties, or will be forced to dig the surface only, but whichever method is adopted, no preventable delay should be allowed to hinder the work, as, apart from the benefit accruing to early cultivation, the labour market promises to be further depleted.

PROTECTION OF CROPS.—Get ready a supply of suitable material for protecting such crops as Celery and Broccoli. The old plan of earthing up Turnips sufficiently to cover the roots is a good one, and is better than hitting the roots and storing them. Sufficient Parsnips and other root vegetables should be lifted to secure a temporary supply, and as a precautionary measure, in case frost is of long duration, cover a portion of the Parsnip bed with litter. It may be necessary to add an additional inch or two of soil to the Potato clump.

WORK IN BAD WEATHER.—Take advantage of bad weather to forward work which will facilitate matters later and prevent delay during the busy season. Pear, Bean, and other stakes should be sorted, pointed, and made into bundles. Labels may be made, old ones cleaned, repainted, and re-written. Overhaul forks, and put them in a proper condition for use. It is well to consider that there is a shortage of potassic manures. Burn all garden rubbish, prunings, hedge trimmings, and dry rubbish of any kind, and store the ashes whilst they are dry. In coastal districts seaweed may generally be collected, as this is a valuable source of potash.

RHUBARB.—Roots previously lifted and exposed to the weather may be brought into heat at regular intervals. Almost any structure is suitable provided a little warmth is available, and to obtain well-coloured stalks the leaves should be grown in plenty of light. Roots placed in boxes of soil at intervals may be forced in a light position in any warm house.

SEED ORDER.—Complete the seed order at the earliest moment, reviewing the season's requirements thoroughly and exhaustively. A little forethought now may materially lighten the labour and worry of the busy season, and prevent delay. Early orders, always advisable, are more than ever necessary this season, as the stocks of the seed merchants are depleted. Economy should be carefully studied, but it will be well to bear in mind that extreme parsimony usually results in an increased expenditure in the end.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would oblige delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News. Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations. The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

AVERAGE MAXIMUM TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 29.7.

ACTUAL TEMPERATURE:—Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 6 (10 a.m.): Bar, 30.2; Temp, 54°. Weather, B. S.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY
Rose Trees, Shrubs, Perennials, etc., at Stevens' Room, 58, King Street Covent Garden, London, W.C.

MONDAY, WEDNESDAY, AND FRIDAY
Hardy Bulbs at 12 o'clock, Herbaceous Plants, Shrubs, and Roses at 1.30 o'clock, by Protheroe and Morris, 67 and 68, Cheapside, E.C.

WEDNESDAY
Miscellaneous Bulbs at 1 o'clock, 1,235 cases Japanese Liriodendrons at 3 o'clock, by Protheroe and Morris.

THURSDAY
Special sale of Roses, by Protheroe and Morris, at 1.

Dying of Clematis.

The not infrequent dying off of Clematis has puzzled many growers and has engaged the attention of scientists, without, however, leading to any certain discovery of cause or remedy. It is sometimes said, perhaps with truth, that the malady is more apt to make its appearance in grafted hybrids than in plants growing on their own roots.

Recent experiments carried out at the New York Agricultural Experiment Station at Geneva, N.Y., lead Mr. W. O. Gloyer, the author of the experiments, to conclude that the disease is due to the activity of a fungus, *Asechyta clematidina*, and it is stated that this view has been confirmed by inoculating healthy plants with the fungus, and thereby causing them to suffer from the disease. The symptoms caused by the presence of the parasite are varied. In some cases they take the form of a stem-rot, in others of leaf spot, and in others, again, both symptoms may occur. The stem-rot is common in hybrids grown in the open, and both stem rot and leaf spot may occur in cuttings taken for purpose

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of propagation. In the case of Clematis paniculata both forms of the disease occur. Mr. Gloyer finds that there is less disease in trained plants than in those which are left to trail over the ground. He recommends that where staking is not practicable, as for example, in the case of C. paniculata, grown on a large scale in nurseries, the young plants should be transplanted in the open and placed wide enough apart to prevent them from becoming matted together. The following spray fluid is recommended: 1lb. of laundry soap to 6lb. of sulphur, mixed with 15 gallons of water. Before spraying the plants all dead leaves and shoots should be removed. The removal of dead parts should also be practised in the case of plants wintering in the open, for the fungus is resistant to cold, and remaining in the soil may give rise to a new outbreak of disease in the spring. For this reason also the site on which the disease has appeared should not be used again for the planting of Clematis until some years have elapsed.

Wherever possible the old dead wood or established plants should be cut out as soon as the new growths appear, for the fungus may apparently spread back from the old, brown, discoloured wood, and infect the young shoots.

Needless to say, proper methods of cultivation must be practised, and attention paid to the provision of a good rooting medium, and one which is not apt to dry out. Those who plant Clematis against walls or trees should remember that without a well-prepared soil the ground is bound to become dry, and in that case the plants will fall easy victims to the disease.

From our own experience we are inclined to suspect that more than one disease is responsible for the dying off of Clematis; but even so, if Mr. Gloyer's observations are well founded, they should, if acted upon, prove of service to growers of this popular flowering plant.

ROYAL AGRICULTURAL SOCIETY'S SHOW.

The Council of the Royal Agricultural Society has decided to hold the usual horticultural show in connection with the annual agricultural exhibition at Manchester on June 27-July 1, 1916. Schedules are in course of preparation, and will be sent on application to Mr. PETER BRAY, Trentham, Stoke-on-Trent.

NATIONAL CHRYSANTHEMUM SOCIETY.

We are asked to announce that on and after January 1, 1916, the address of the secretary of the National Chrysanthemum Society, Mr. RICHARD A. WITTY, will be 6, Dowgate Hill, Cannon Street, London.

ROYAL NATIONAL TULIP SOCIETY.

The Royal National Tulip Society will hold two shows in 1916, the first on May 16, at the R.H.S. Hall, Vincent Square, Westminster, and the second on May 24 and 25, at the R.H.S. Show at Chelsea.

SOUTHAMPTON ROYAL HORTICULTURAL SOCIETY. The annual general meeting of the Southampton Royal Horticultural Society will be held at the Municipal Offices, on Monday, the 17th inst., at 4.50 p.m. The society's summer show will be held at South Stoneham House, on Wednesday, July 12.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

The seventy-sixth annual general meeting of the members and subscribers of this institution will be held at "Simpsons," 101, Strand, London, on Thursday, January 20, 1916, at 2.45 p.m., for the purpose of receiving the report of the committee and the accounts of the institution (as audited) for the year 1915; electing officers for the year 1916; and for the election of eighteen annuitants on the funds. The chair will be taken by the treasurer and chairman of the committee, Sir HARRY J. VEITCH, at 2.45 p.m. The poll will be open at 3 p.m., and close at 4 p.m. It is announced that during the year 1915, JANE FORTY, MAY POOLEY, SARAH SALWAY, and ELIZABETH SKINNER, widows of annuitants, were placed on the funds without election, in accordance with Rule III., 13. We regret to learn that the income received during 1915 is smaller than usual, in consequence of the inability of the committee to hold the usual festival dinner, which has always been helpful in aiding the funds of the institution. Nevertheless, the committee recommend the election of eighteen candidates from a list of sixty-one approved applicants.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting of the Surveyors' Institution will be held in the Lecture Hall of the Institution on Monday, the 10th inst., at 5 p.m., when a paper, entitled "Some Notes on Reinforced Concrete," will be read by Mr. R. M. KEARNS.

PRESENTATION TO A GARDENER.—Mr. ALEXANDER LAWRENCE, an employee of the Aberdeen Town Council, has retired after 24 years' service, and to mark the occasion his fellow-workmen and friends recently made him a presentation. During his 24 years' service Mr. LAWRENCE's chief duty has been the care of the trees in the public thoroughfares, and their good appearance shows the skilful manner in which Mr. LAWRENCE accomplished his work.

PRESENTATION TO A SECRETARY.—At the annual meeting of the Elgin District Horticultural Society, held on the 29th ult., the secretary and treasurer, Mr. THOMAS L. MANN, received presentations from the members. The Society was resuscitated two years ago, after being in abeyance for twelve years, and has a membership of 62. Twenty joined the association in 1915, and there is a balance to the credit of the Society of more than £13. It was stated that the success of the Society was entirely due to Mr. MANN, who is a local seedsman and florist.

R.H.S. GARDENERS' DIARY.—This excellent diary has proved its worth and usefulness to gardeners of all kinds. The issue for the present year has all the items of information which were contained in previous issues. The formulae for washes and sprays have been revised and extended, and new items of information have been introduced, particularly the fruit-growing calendar, pp. 12-14, in which are given concise and excellent directions of the work to be done month by month, and on p. 25 a table for the pruning of shrubs which contains a large amount of most valuable instruction in compact form. The Editor, the Rev. W. WILKS, Secretary of the R.H.S., is to be congratulated on the admirable way in which he has performed the work of preparing this diary.

"THE JOURNAL OF HORTICULTURE."—We regret to learn, from a note contained in last week's issue of the *Journal of Horticulture*, that this long-established journal has decided to suspend publication during the period of the war. The paper has had a long and useful career, having been founded in 1848 by the late GEORGE W. JOHNSON, who died in 1886. It was established under the title of the *Cottage Gardener*, but this was altered to that of the *Journal of Horticulture*. The paper enjoyed a

period of success and popularity under the joint editorship of Mr. JOHNSON and the late Dr. Hogg, author of the famous *Fruit Manual*. In 1881 Mr. JOHNSON retired, leaving Dr. Hogg sole editor of the *Journal*. Since Dr. Hogg's death in 1897, the editorial work has been well discharged by Mr. HORACE J. WRIGHT (who was twice editor) and Mr. J. HARRISON DICK (now editor of the *Florists' Exchange*, U.S.A.). The war has been responsible for the withdrawal from publication of many journals; horticulturists will particularly regret the suspension of the *Journal*, which has been in existence for longer than the memory of the oldest, and has filled with honour a recognised place in horticultural journalism.

WAR ITEMS.—Those small farmers in the Marne and the Meuse who have been the recipients of help in kind offered by the British farmer through the Agricultural Relief of Allies Committee are not only deeply grateful, but show the keenest pride in displaying the gifts which are sent from 16, Bedford Square. In one small town not far behind the firing line the arrival of a portion of the Committee's gift of poultry caused amazement. Such magnificent birds (many of them of pedigree stock) had not been expected. There and then it was decided to hold a show of the birds a few days later. This was attended by the whole countryside, and raised a small sum for local war charities. Moreover, many letters of warm thanks have been received by the Committee. The hearty support which British farmers have recently afforded the Agricultural Relief of Allies Fund is reflected in a statement that at the end of 1915 the fund stood at £42,633. This sum has been built up mainly through the medium of the jumble sale which has been exploited with such excellent results in nearly every agricultural centre in the country. The gift sale at the Smithfield Show heads the list of such auctions with £4,800 as the net proceeds. Another large contribution included in the December total of the fund was one of £3,000 from the County of Huntingdon. The Committee hopes very soon that the contributions in money will exceed £50,000, and to supplement the gifts of live stock, implements and seeds, which have been made direct to the small farmers in Allied countries with further shipments of articles which shall help still further in repairing the damage done by the enemy. One of the first gifts to be made in the New Year will be of seed Oats, and the co-operation of farmers in making the consignment one worthy of the cause is invited by the Committee.

—The French Minister of Agriculture has forwarded to the Committee a return showing, in detail, how the sacks of wheat contributed by British farmers have been distributed among the peasant farmers of the ravaged districts of France. As indicating how thorough is the co-ordination between the French Government and the Relief Committee, it may be mentioned that the return gives the name of each individual recipient and the number of sacks allotted to him.

THE MANGOSTEEN.—The Mangosteen, a popular tropical fruit, has now been added to the list of Queensland products, numbers of the true Mangosteen having recently been grown at the Queensland State Nursery at Kamerunga. The fruit is well grown, and of excellent quality. The cultivation of the Mangosteen is practically confined to within 1° or 2° of the Equator. It is most commonly grown in the Federated Malay States, Northern Java, Sumatra, and other places in the immediate vicinity. The Mangosteen is there considered to be the best of all tropical fruits.

THE SEED-GROWING INDUSTRY A RESERVED OCCUPATION.—Mr. ARTHUR W. SUTTON informs us that, as a result of an interview on December 14 with the Board of Trade Committee dealing with "Reserved Occupations," attended by

representatives of Messrs. J. CARTER AND CO., Messrs. GARTON AND CO., Mr. EDWARD SHERWOOD, Mr. LEONARD G. SUTTON, and himself, the seed-growing industry, so far as certain expert employes are concerned, has been included in the official list of "Reserved Occupations." The deputation pointed out to the Committee that the maintenance of the national food supply would be an impossibility if the production and distribution of vegetable and farm seeds were seriously curtailed, and that the colonies would be equally affected, as they depend almost, if not entirely, upon England for the supply of seeds of all kinds. The Committee gave a sympathetic hearing to the views expressed by the deputation, but much difficulty was experienced in defining the particular occupations of those expert hands who might be "starved," and

received the following letter from the Board of Trade, dated December 30:—

"Board of Trade (Department of Labour Statistics), Gwydyr House, Whitehall, London, S.W. December 30, 1915. Sir, I am directed by the Board of Trade to forward to you a typed list, which includes occupations reserved in your industry. In addition, however, to the typed list, reference should also be made to the printed lists enclosed herewith, as they probably contain the names of other reserved classes of workpeople in your employment, e.g., mechanics, enginemen, stokers, carters, etc. I am to point out that if any man in a reserved occupation receives notice calling him up for service (Army Form W. 5, 1915), he should at once see his employer, who should forward the notice forthwith to the recruiting officer who has issued it, together with



FIG. 7. INFLUENCE OF DAHLIA IMPERIALIS. FLOWERS WHITE, FAINTLY TINGED WITH PINK. (See p. 16.)

the Committee eventually suggested that the definitions, "Heads of Departments" and "Seed Experts," might meet the case, and that under the term "Seed Experts" it might be possible to include those employes whose technical knowledge in any branch of the seed-growing or seed distributing departments of the trade were absolutely indispensable. In the supplementary list of "Reserved Occupations," published in the *Times* of December 30, the seed-growing industry was included thus:—Seed Growing Industry, Heads of Departments, Seed Experts. "In view of the importance of maintaining a supply of agricultural seeds, the Reserved Occupations Committee consider that farmers growing agricultural seeds in bulk for seedsmen should receive special consideration from the Local Tribunals with regard to the trained men required for the purpose." On January 1 Mr. SUTTON

a certificate signed by the employer, stating the precise occupation in which the man is actually engaged, and the name, address, and business of the firm by which he is employed. On receipt of these particulars the recruiting officer will provisionally cancel the notice calling up the man, and if on investigation it is found that the statements made by the employer are correct, a mark will be placed in the Army Register against the name of the man. I am to add that it is open to employers to bring before the Local Tribunal for regulating recruiting, in accordance with Section 11 of the enclosed instructions, the case of any men not included in the list of reserved occupations, provided that such men have been attested under Section B, Army Reserve. Applications for forms of claim and other communications to tribunals should be addressed to the Town Clerk or to the Clerk to

the District Council, as the case may be. Yours faithfully, (Signed) F. H. McLEOD.

NEW FLAGSTAFF AT KEW GARDENS. The new flag-pole for erection in the Royal Gardens, Kew, the gift of the Government of British Columbia, is one of the largest in the world. It is a massive spar of Douglas Fir, 215 feet in length, and weighs 18 tons. It was shipped from British Columbia on the "Merionethshire," and on arrival at the Victoria Dock, London, was dropped into the Thames and towed up the river (see fig. 8). For a time the huge log lay in Linchpin Reach, waiting for favourable winds and tides to begin the journey. The great length of the pole made

the tug, towed to the bank, and secured to posts driven into the river bank, by strong chains. By means of cranes and derricks the huge log will be lifted out of the water on to the towing-path, hauled over the bank and ha-ha, through a hedge, and so into the gardens. Thence it will be towed on timber tugs to the raised grassy mound where it will be erected. The old mast, which was 159 feet high, was erected in 1861.

TRADE WITH CANADA.—The Office of H.M. Trade Commissioner in Canada reports that a Toronto firm wishes to represent United Kingdom manufacturers of spades and shovels, and of King-ban manufacturers of the goods mentioned, and exporters of U.K. goods, desirous of

a year before the exhibition opened, so that they would be thoroughly acclimatised and established before the test of judging was undertaken. The response was world-wide. Each variety grown under number only was judged every month of the period of the exhibition by a group of the leading Rose growers of America, who awarded points to each Rose, the set of judges being different on each occasion. At the end of the test the total points were counted, with the result of success for the Belfast firm, who are to be heartily congratulated. The governors of the exhibition reserve the right to name the new Rose in commemoration of the great engineering feat which the exhibition was to inaugurate.

HOME-GROWN TIMBER COMMITTEE.—We are informed by the Board of Agriculture and Fisheries that the Home Grown Timber Committee has received a large number of offers of timber, which are being dealt with as rapidly as possible. Some days must elapse, however, before all communications can be answered. Any lots which are *prima facie* suitable for the committee's purposes will be inspected as soon as the pressure upon the committee's staff will permit. Meanwhile, it may be of service to land-owners, agents, and others to know that the classes of growing timber at present principally required by the committee are:—Scots and Corsican Pine, Silver Fir, Douglas Fir and Larch of good dimensions, and in lots of about 20,000 cubic feet and upwards. Plantation Ash of fair size, which will be accepted in comparatively small lots. Other hardwoods of good dimensions are also required, but, as a rule, these cannot be considered in small lots. The committee is also prepared to enter into arrangements with the owners of estate sawmills for the conversion of timber. The committee would be glad to be informed of sawmill plant that is idle or not fully employed, in order that if possible arrangements may be made for increased output. All communications should be addressed to the Secretary, Home-grown Timber Committee, Craven House, Northumberland Avenue, London.

PUBLICATIONS RECEIVED.—Reprints from *Journal of Agricultural Research*—(1) *Distribution of the Virus of the Mosaic Disease in Carules, Filaments, Anthers, and Pistils of Affected Tobacco Plants*; by H. A. Allard. (2) *Dissemination of Bacterial Wilt of Cucurbits*. By Frederick V. Rand. (Washington, D.C.: Department of Agriculture.)—*A Student's Book on Soils and Manures*. By Dr. E. J. Russell. (Cambridge, at the University Press.) Price 3s. 6d. net.—*Mimicry in Butterflies*. By R. C. Punnett, F.R.S. (Cambridge, at the University Press.) Price 15s. net.—Bulletin No. 295 of the United States Department of Agriculture: *The Zimmerman Pine Moth*. By Josef Brunner. (Washington: Government Printing Office.) Price 10 cents.—*Annual Report of the Department of Agriculture, Trinidad and Tobago, 1914-15*. Part I., Administrative. (Trinidad: Government Printing Office, Port of Spain.)—*My Growing Garden*. By J. Horace McFarland. (New York: The Macmillan Co.) Price \$2.00.—*Roses and Their Cultivation*. By T. W. Sanders. Illustrated. (London: W. H. & L. Collingridge, 148, Aldersgate Street.) Price 3s. 6d. net.—*Symons's Meteorological Magazine*. December, 1915. Edited by H. R. Mill. (London: E. Stanford, Ltd., 12-14, Long Acre.) Price 4d.—*The Journal of Heredity*. December, 1915. (Washington, D.C.: American Genetic Association.)—*Annual Report of the Bureau of Industries for the Province of Ontario, 1914*. Parts I and 2. (Published by the Ontario Department of Agriculture. Toronto: L. K. Cameron, Printer to the King.)—Crop Bulletin 125, *Report of Ontario Bureau of Industries on the Crops and Live Stock for 1915*.—*British Fern Gazette*, Vol. 3, No. 26. (Kendal: British Pteridological Society.) December, 1915.—Reprint from the *Journal of Agricultural Research*, Department of Agriculture. *A Honeycomb Heart-Rot of Oaks, Caused by Stereum Subpileatum*. By William H. Long. (Washington, D.C.: Department of Agriculture.)

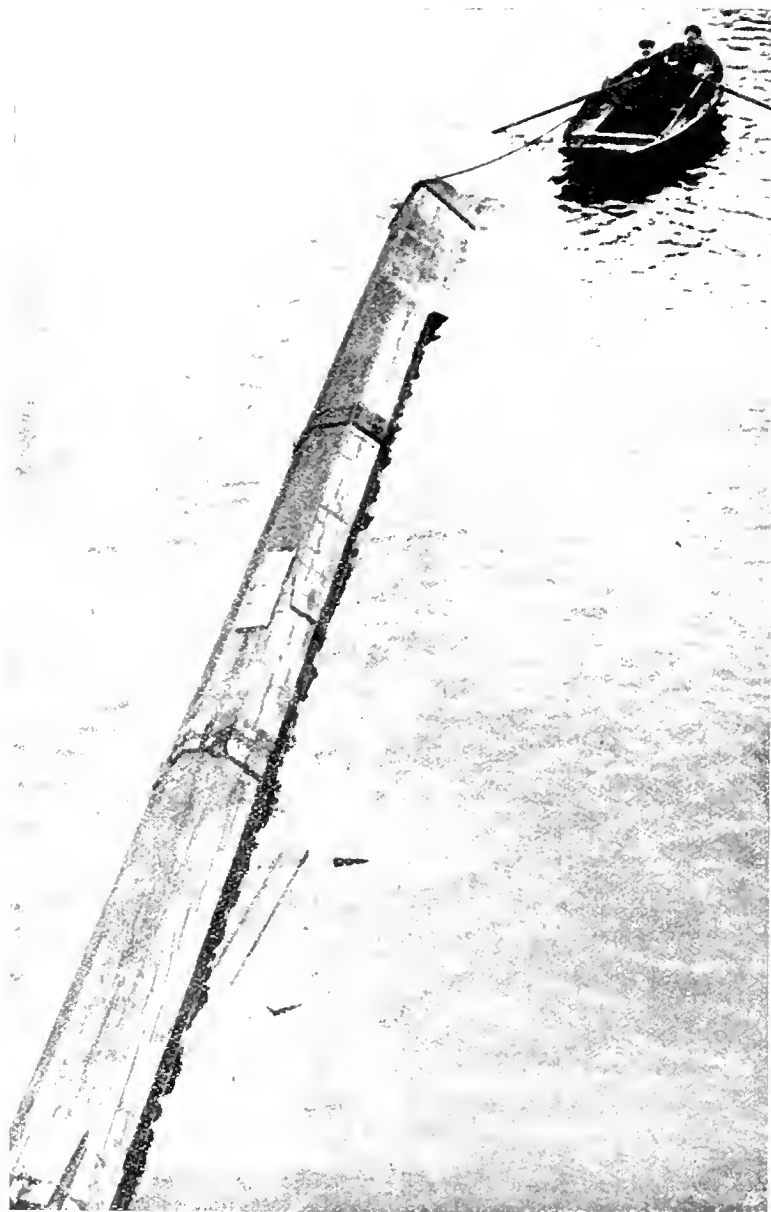


FIG. 8. TOWING THE KEW FLAGSTAFF UP THE THAMES.

its guidance along the winding course of the river an extremely hazardous and difficult task. The traffic of the Pool was safely negotiated at an early hour in the morning, and the Tower Bridge was passed without mishap. London Bridge, with its narrower arches, required particularly careful watermanship, but this and all the subsequent bridges were safely passed, the long mast trailing slowly behind the carefully manoeuvred tug. An acute bend in the river beyond Putney brought the tug up against a stiff head wind, which increased the difficulties of transit, but all were happily overcome, and the log was finally brought to Kew Bridge on the 3rd inst., as shown in fig. 9. It was then freed from

appointing agents in Canada, may obtain the name and address of the respective inquirers on application to the Commercial Intelligence Branch of the Board of Trade, 75, Basinghall Street, London, E.C. The reference number, C.I.B. 54,909, should be quoted.

AWARDS AT THE PANAMA PACIFIC EXHIBITION.—We learn that Messrs. Hiram Dickson, Ltd., Royal Nurseries, Belfast, have been awarded the 1,000 dollars trophy at the Panama Exhibition for the best new Rose not yet in commerce. The exhibition authorities invited Rose hybridists to send for trial the best of their seedlings, the plants to be grown in a specially prepared garden in the exhibition grounds for

POUR NOS AMIS FRANÇAIS ET BELGES.

CHRONIQUE SPÉCIALE (LXI).

L'HORTICULTURE EN BELGIQUE.

L'exportation de Chicorée de Bruxelles a donc été arrêtée par les Allemands. Ce légume est dorénavant considéré comme denrée alimentaire dont l'envoi à l'étranger serait de nature à diminuer les ressources alimentaires du pays. N'était-ce que cette mesure augmente encore les difficultés dans lesquelles se débattent les producteurs, elle serait réjouissante, car elle consacre définitivement la valeur du légume belge et elle confirme que la faim fait de plus en plus sentir ses effets en Allemagne.

L'hiver dernier, les Allemands n'avaient pas cru devoir s'opposer à l'exportation de la Chicorée-Witloof, mais leur arrêté prohibant les envois de légumes, entré en vigueur le 30 août dernier, ne faisait pas d'exception pour ce produit. Les envois à l'étranger qui ont eu lieu au mois de novembre, n'ont pu se faire qu'à la condition, pour les exportateurs, d'obtenir un permis spécial "Freigabe," et d'acquitter un droit de cinq centimes au kilo. Les envois se faisaient par les bateaux de Braakman, de Bruxelles ou Anvers à Rotterdam, d'où on les distribuait entre les centres de consommation. Le frêt s'élevait à quinze florins les cent kilos. Puis tout permis fut refusé. On raconte qu'un marchand hollandais, prévenu peut-être de ce qui allait arriver, avait au dernier moment pu exporter de fortes quantités de Witloof. Depuis lors, l'Obstzentrale a le monopole du commerce et s'efforce de contribuer à desserrer les tenailles que la crise des vivres applique en Allemagne.

Des circulaires ont été répandues dans toutes les villes allemandes, signalant l'importance considérable que la Chicorée de Bruxelles a prise dans l'alimentation des populations belge, hollandaise et française. L'Obstzentrale peut fournir, à prix modique, un légume d'hiver sain et frais, jouissant à la fois des qualités culinaires de l'Asperge et du Choufleur et qui, grâce à sa haute teneur en fer, les surpasse comme reconstituant du sang.

Les envois se font en colis de 10 kilos, par chargement de 5.000 kilos.

Les recettes que l'Obstzentrale fait insérer dans la presse allemande ou qu'elle distribue par voie de circulaires, sont bien adaptés aux circonstances. On y fait valoir que le légume peut être préparé sans la moindre addition de matière grasse dont la pénurie est si sensible en Allemagne. On recommande de conserver l'eau de décoction qui peut être employée dans la cuisine et l'une des recettes prévoit l'emploi de Kriegsmehl!

Une dame qui a pu quitter Berlin tout récemment racontait que d'autres produits belges, tels que le Raisin et l'Epinard, doivent également donner l'illusion qu'il y a des vivres en abondance. Ils proviennent de la "Nouvelle Allemagne!"

En ce qui concerne le Raisin, on se rappelle que des fonctionnaires allemands avaient eux-mêmes proposé de faire des démarches pour régler l'exportation vers la Hollande, l'Angleterre et l'Amérique. En novembre, il en fut vendu à la Hollande 700 kilos, et au prix de quelles difficultés!

En plantes, bulbes et fleurs, la Belgique a pu, pendant le mois de novembre, expédier en Hollande 371.000 kilos. Les envois de Pommes s'élevèrent à 32.300 kilos, ceux de Poires à 1.400 kilos. De plus les statistiques néerlandaises signalent la réception de 176.000 kilos de produits maraichers non dénommés. C'est le total des en-

vois de Chicorée-Witloof, aucun autre légume n'ayant pu être exporté.

En revanche, la Belgique a dû acheter en Hollande 437.000 kilos de Pommes, 10.500 kilos de Poires, 1.700 kilos de Noix, 4.964.900 kilos de Choux cabus, 3.000 kilos de Choux fleurs, 87.600 kilos d'Oignons et d'Echalotes, 400 kilos de Tomates, 772.100 kilos de Carottes et 699.700 kilos de légumes divers.

Les importations de bulbes et plantes sont insignifiantes, ce qui apporte une nouvelle preuve du peu d'activité qui règne dans les établissements horticoles.

Frij Belge nous apporte les derniers cours des fruits à Bruxelles. Raisin: Black Alicante, 1 fr. à 1 fr. 80 le kilo; Gros Colman, 0 fr. 80 à 1 fr. 80; Muscat d'Alexandrie, 2 fr. à 3 fr. 40; Foster's White Seedling, 1 fr. 20 à 2 fr. 80; Pommes, 0 fr. 20 à 0 fr. 50; Poires, 0 fr. 20 à 2 fr. 20; Tomates, 0 fr. 40 à 0 fr. 90.

Quand on y compare les prix faits pour les fruits forcés dans les autres pays, où ils atteignent le double et même le triple, on voit jusqu'à quel point la "tendre sollicitude" qui pousse l'occupant à interdire l'exportation "dans l'intérêt des producteurs," est favorable à ceux-ci! Peu importe, pourvu que les ménagères d'outre Rhin puissent rendre la croûte sèche de "Kriegsbrot," moins dure, en remplaçant le beurre ou la graisse par du Raisin!

NOUVELLES DIVERSES.

L'HORTICULTURE ITALIENNE ET LA GUERRE.

La guerre a réduit dans de très fortes proportions les exportations de fruits d'Italie. La diminution en une année est estimée à près de 40 millions de francs. Par suite de la fermeture des marchés allemands et austro-hongrois, les plus importants pour la production italienne. En 1914, avant que l'Italie n'eût déclaré la guerre, la valeur de ses envois de fruits en Allemagne avait baissé de plus de 25 millions. Celle des envois de légumes avait augmenté au contraire de près de sept millions.

FLEURS DU MOI. Les fleurs du Littoral de la Méditerranée sont abondantes maintenant à Londres. Les colporteurs présentent à tous les coins de rue du Mimosa et des Narcisses. Les prix sont raisonnables. Il n'en était pas de même les derniers jours de la semaine de Noël: les envois destinés à cette fête ont été retenus en cours de route et sont arrivés le matin même de la Noël! Les quelques lots de fleurs françaises faisaient conséquemment des prix extrêmement élevés.

LES VIVRES EN BELGIQUE.—Des quantités considérables d'aliments doivent être introduits en Belgique par la "Commission for Relief," l'organisation américaine qui a pris à cœur de tenir en vie la population vivant sous le joug allemand. Pendant le mois de novembre, 150.000 tonnes de denrées alimentaires, représentant une valeur de 56 millions de francs, ont été fournies via le port de Rotterdam. En décembre, le total présumé est de 170.000 tonnes, pour une valeur de 63 millions. On n'a pas trop de peine pour réunir cette quantité énorme de marchandises, mais le transport se fait avec difficulté, par suite de la demande très vive de bateaux pour d'autres services. Le frêt de la tonne a augmenté de 112 francs!

FLEURS COUPÉES ITALIENNES.—A propos de la campagne menée en Allemagne contre des

fleuristes qui continuent à importer des fleurs italiennes, signalons un incident assez curieux. Une firme viennoise qui avait été visée par certaines attaques répondit: "Tâchez donc d'obtenir que le gouvernement allemand interdise l'importation de ces fleurs chez vous, et notre marché s'en passera également, car nous ne pouvons nous approvisionner qu'en nous adressant à l'Allemagne!" Il est, en effet, assez curieux que les Allemands, qui jugent bon de ne pas déclarer la guerre à l'Italie, s'avisent de faire la leçon aux Autrichiens pour leur importation de fleurs qui se fait précisément grâce au bienveillant intermédiaire de l'Allemagne! Ce qui est bon pour soi-même, ne l'est pas toujours pour ses amis. . . .

EXPOSITIONS HORTICOLES EN BELGIQUE.

Les Gandtois ont organisé récemment une exposition de fleurs au local du Chaperon rouge. Comme l'habitude s'est établie pour les manifestations de l'espèce, les recettes ont été versées aux œuvres de secours pour les prisonniers de guerre. A Huy a également eu lieu une exposition, sous le patronage de la société horticole et au profit des œuvres de secours locales.

COMMERCE HORTICOLE AVEC LE PÉROU.

Comme d'autres pays américains, le Pérou doit importer de grandes quantités de Pommes de terre, d'Oignons, etc. L'Allemagne y avait, avant la guerre, un excellent marché pour ces produits. D'autres pays pourraient utilement l'exploiter car les fournisseurs allemands n'expédiaient probablement que du produit importé. C'est sans aucun doute le cas pour les Oignons.

CHEZ LES VITICULTEURS BELGES.

Malgré l'arrêté allemand réservant le droit de chasse aux officiers des troupes d'occupation, deux braconniers ont été surpris par des patrouilles allemandes près de Hoeylaert. Un échange de coups de fusil a eu lieu. On ignore les sort réservés aux braconniers, mais à la suite de cet incident, la commune de Hoeylaert est l'objet de mesures de rigueur. Après 6 heures du soir toutes les maisons doivent être fermées et personne ne peut se montrer en rue, sous peine d'une amende de 500 marks ou d'un emprisonnement de 3 semaines. Viennent les fortes gelées et les forceries, faute d'entretien courent de grands dangers.

KORT OVERZICHT VOOR DE VLAMINGEN.

De Duitschers hebben in hun land vlag-schriften uitgegeven om tot het verbruik van Witloof uit België aan te sporen. Dit moet het ontbrekende voedsel vervangen. Men drukt er vooral op dat die groente kan bereid worden zonder vet, dat nu zoo schaarsch is in Duitschland.

Voor de laatste verzendingen naar Holland werd telkens 5 centiemer per kilo uitvoerrecht geëischt.

Ongemeen veel eetwaren moeten naar België gevoerd worden. Het Amerikaansch comité heeft in November alleen voor 56 miljoen frank voedingsstoffen ter beschikking der bevolking gesteld.

Ten gevolge eener ontmoeting tusschen Duitschers en wildstroopers, werd de gemeente Hoeylaert gestraft.

In Duitschland werd geklaagd dat sommige Oostenrijkers nog Italiaansche bloemen verkochten. Er werd hun geantwoord dat zulke maar mogelijk was omdat ze van Duitschland kwamen!

NOVELTIES OF 1915.

(Continued from p. 3.)

STOVE AND GREENHOUSE PLANTS.—These plants are not cultivated so extensively as formerly in collections of specimens, but of certain individual kinds, such as *Crotons* and *Draacenas*, and some species of *Erica*, many are still grown. The present tendency is to grow favourite kinds in large numbers rather than odd specimens of many different species. But for a few collections, such as that of Sir Frank Crisp at Friar Park, where so many and interesting plants are cultivated, some of the older kinds would be lost altogether. Collections of Ferns declined in favour some years ago, but certain kinds, such as *Pteris*, *Adiantum*, and *Asplenium*, are still grown in quantities. Quite lately, however, varied collections of Ferns have begun to command more attention, especially of the hardy species.

Shrubs and herbaceous and rock plants show very marked progress in favour during the past year. Many of the recently-introduced Chinese species, which are now getting established, have

tive kinds, and away from the ancient globular "show" specimens.

The following new or specially interesting plants and fruits have been illustrated in the *Gardeners' Chronicle* in 1915:—

- Aciphylla Traversii*, January 16, pp. 31 and 34.
Aenistus Miersii, January 30, p. 58.
Allium kansuense, May 1, p. 251.
Androsace Bulleyana, July 17, p. 41.
Androsace tibetica, Dec. 11, p. 560.
Anemone demissa, October 30, p. 278.
Anemone rupicola, May 22, p. 272.
 Apple Edwin Beckett, October 2, p. 222.
 Apples Beauty of Stoke and Gascoyne's Scarlet Seedling, Coloured Supp., December 25.
Aristolochia longicaudata, June 19, p. 546.
Aster alpina Nancy Perry, July 3, p. 2.
Begonia Scarlet Beauty, Coloured Supp., January 9.
Camellia japonica (fruits), September 11, p. 175.
Campanula arvensis, October 16, p. 242.
Carnation Morning Star, April 5, p. 178.
Carnation Mrs. Mackay Edgar, December 18, p. 385.
Carnation Northern Star, April 5, p. 179.
Chlorophytum Bowkeri, August 28, p. 141.

- Cytisus Dallmorei*, June 12, p. 351.
Dahlia Patrol, August 21, p. 124.
Dahlias Worth Star, Lowfield Star, and Crawley Star, Coloured Supp., January 25.
Daphne arbuscula, May 15, p. 268.
Davidia involucreata, July 17, p. 45.
Decaisnea Fargesii (fruits), December 18, p. 381.
Dombeya calantha, Supp., March 27.
Drosophyllum lusitanicum, January 16, p. 27.
Erigeron Asa Gray, June 26, p. 357.
Gentiana ornata Veitchii, November 6, p. 288.
Gladiolus kubaensis, August 7, p. 87.
Godetia Lavender, June 26, p. 354.
 Gooseberry Whinham's Industry, July 24, p. 56.
Halesia hispida, July 3, p. 6.
Helianthus (Colerette), November 6, p. 295.
Hibiscus Wainiae, January 2, p. 8.
Incarvillea sp. (Mr. Farrer's), December 11, p. 365.
Iris bracteata, December 18, p. 382.
Iris filifolia, July 10, p. 20.
Iris Lohengrin, June 19, p. 340.
Iris sp. (hyacinthina), December 25, p. 391.
Iris tingitana, February 13, p. 85.
Larix olgensis, February 27, p. 109.
Lewisia columbiana, May 22, p. 283.
Lilium Bolanderi, January 9, p. 14.
Lilium cernuum, November 15, p. 302.
Lilium hybrid (pardalium \times Parryi), January 9, p. 15.
Lilium regale, July 10, p. 27.
Lobelia laxiflora angustifolia, May 15, p. 263.
Lonicera Maackii, June 12, p. 334.
Lysichitum camtschaticense, May 29, p. 301.
Magnolia parviflora (fruits), October 30, p. 277.
Narcissus Beacon, Coloured Supp., May 8.
Narcissus Centaur, May 8, p. 244.
Narcissus Chryse, April 17, p. 215.
Narcissus Flame, April 24, p. 219.
Narcissus Golden Chief, April 3, p. 183.
Nerine Bowdenii, August 28, p. 132.
Olearia insignis, June 12, p. 333.
Ornithogalum lacteum, April 10, p. 193.
Paeonia obovata, May 29, p. 290.
Paeonia (Tree) La Lorraine, Coloured Supp., January 30.
 Pear Laxton's Superb, September 25, p. 201.
Pentstemon Jaffrayanus, July 31, p. 67.
Picea (Japanese species), August 14, p. 103.
Plum Allgrove's Superb, September 4, p. 158.
Polypodium Dryopteris plumosum, September 18, p. 187.
Polystichum aculeatum Drucyi, October 9, p. 228.
Polystichum aculeatum foliosum, October 9, p. 228.
Polystichum aculeatum gracillimum, October 9, p. 226.
Posoqueria densiflora, June 5, p. 507.
Posoqueria macrocarpa, June 5, p. 313.
Primula Adonis, May 1, p. 235.
Primulas brevifolia, gracilenta and florida, April 17, p. 207.
Primula Excelsior, Coloured Supp., April 10.
Primula farinosa, November 27, p. 355.
Primula Poissonii, June 19, p. 352.
Primula Reinii, April 17, p. 214.
Primula septendoba, November 6, p. 297.
Primula sp. (Mr. Farrer's No. 2), June 12, p. 385.
Primula stenocalyx, November 27, p. 332.
Primula (Sutton's Star), March 6, pp. 120, 121.
Primula Unique, April 10, p. 197.
Primula urticifolia, November 20, p. 325.
Pyracantha crenulata, Coloured Supp., February 20.
Pyrus Sargentii, November 15, p. 309.
Rhododendrons (dwarf), December 11, pp. 358 and 359.
Rhododendrons at Chelsea, Coloured Supp., May 22.
Rhododendron lacteum, November 27, pp. 337 and 338.
Robinia Kelseyi (fruits), July 31, p. 69.
Robinia Kelseyi (in flower), July 31, p. 72.
 Rock Garden at Chelsea, Coloured Supp., July 10.
Romulea Macowanii, July 17, p. 55.

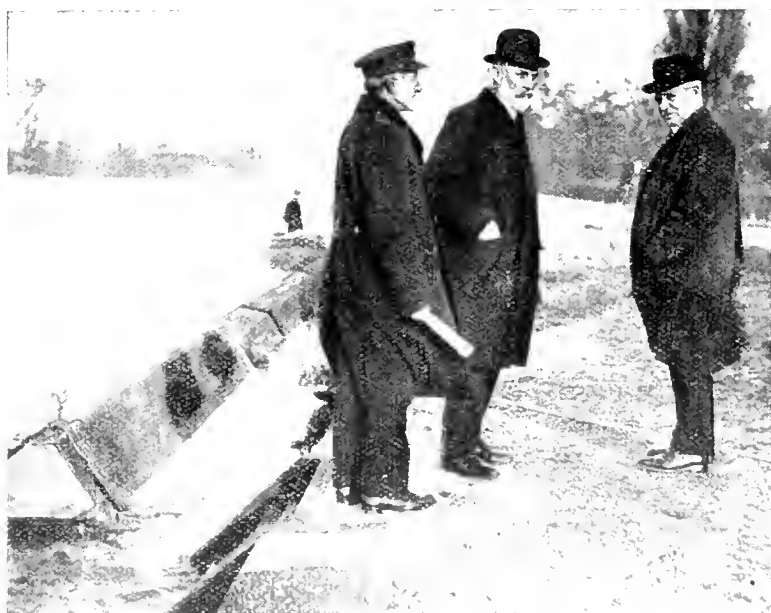


FIG. 9.—MAKING ARRANGEMENTS FOR RECEIVING THE FLAG STAFF AT KEW.

The figures (reading from right to left) are: Mr. W. Watson, Curator; Mr. G. D. Patterson, Clerk of Works; and the Inspector of the River Police.

proved attractive features at the shows. The natural manner in which rock plants are now shown tends to increase their popularity. The Iris, with its multitudinous species and varieties, has proved one of the most popular flowers, even in gardens which, until recent times, knew only the forms of what is termed the German Iris. Now the many little genus of smaller stature are equally admitted.

The *Narcissus* is an equally popular favourite, and the raising of new varieties from seeds is an ideal pursuit for garden-lovers who can give the necessary time to this interesting occupation.

CARNATIONS are among our oldest garden favourites; perhaps it was not until the introduction of the perpetual flowering kinds, and the production of the later novelties in that class, that they became of such importance in gardens. During the past year a fair number of good novelties have been certificated.

ROSES have been reinforced by novelties in each section. These charming flowers are beloved by all gardeners, and now that the Wichmaniana and Rambler classes are fairly established in popular favour, every cottage porch and fence is decked by them.

CHRYSANTHEMUMS and **DAHLIAS** have occupied the attention of their respective adherents, the tendency in novelties being towards the deco-

- Chrysanthemum Aphrodite*, November 30, p. 526.
Chrysanthemum carnatum Sultan, April 5, p. 177.
Chrysanthemum Ceres, November 20, p. 527.
Chrysanthemum General Smith Dorrion, February 6, p. 65.
Chrysanthemum James Stredwick, January 30, p. 52.
Chrysanthemum Thomas Beeson, February 6, p. 72.
Chrysanthemum Undamited, February 6, p. 64.
Chrysanthemum W. Rigby, February 6, p. 71.
Clematis Henryi, August 21, p. 114.
Codonopsis convolvulacea, August 28, p. 157.
Coronopsis Grantii, May 15, p. 265.
Crataegus punctata, Supp., June 12.
Crocus aerius, March 15, p. 140.
Cupressus arizonica, June 5, p. 515.
Cupressus Cashmeriana, September 25, p. 196.
Cupressus finchii, August 7, p. 78.
Cupressus lusitanica, April 17, p. 200.
Cupressus lusitanica Benthani, May 15, p. 259.
Cupressus macrocarpa Lambertiana, January 30, p. 55.
Cupressus nootkatensis, December 18, p. 574.
Cupressus nootkatensis pendula, December 18, p. 375.
Cupressus sempervirens, February 15, p. 73.
Cyclamen Mont Blanc, March 27, p. 171.
Cytisus albus dumus, October 2, p. 217.

Romulea rosea, July 17, p. 37.
Rosa floribunda, October 2, p. 210.
Rose British Queen, Coloured Supp., February 6.
Rose Flame of Fire, July 31, p. 62.
Rose Golden Emblem, September 25, p. 196.
Rose Hoosier Beauty, April 24, p. 225.
Rose Lady Bowater, July 3, p. 15.
Rose Lemon Pillar, July 17, p. 34.
Rose Mrs. John Foster, October 25, p. 266.
Rose Paul's Climber, May 29, p. 292.
Rose Queen Alexandra, July 3, p. 12.
Rose Queen of the Belgians, April 24, p. 226.
Rottlera Forrestii, October 30, p. 279.
Saxifraga Irvingii, March 20, p. 158.
Saxifraga manshuriensis, September 18, p. 179.
Saxifraga Vandelii, May 1, p. 258.
Scolopendrium vulgare crispum speciosum, October 30, p. 281.
Scolopendrium vulgare plumosum Perry's var., October 16, p. 253.
Senecio multibracteata, May 22, p. 274.
Solanum aculeatissimum, November 13, p. 314.
Stachyurus chinensis, September 4, p. 147.
Stellera sp. in China, December 25, p. 596.
Strawberry St. Fiacre, October 9, p. 235.
Streptocarpus Taylora, November 6, p. 293.
Syringa Sweginowii, June 19, p. 345.
Tithonia speciosa (*Helianthus*), Coloured Supp. March 13.
Tropaeolum polyphyllum, August 21, p. 114.
Tulip Winner, May 22, p. 274.
Xanthoeras sorbifolia at Aldenham, August 7 p. 90.
Yucca filamentosa, April 3, p. 187.

THE FLORIST'S GLADIOLUS.

THE modern race of Florist's Gladioli has arisen by continued selection from the hybrids originally obtained between four well-defined species, and generally, if not always, in spite of the very great advances, the influence of these species can still be recognised. The older race of *Gandavensis* (*Pscittacinus* × *Cardinalis*) was combined with *Ramosus* (*Cardinalis* × *Oppositiflorus*), and *Blandus* was crossed in, and the race so produced, under the general name of *Gandavensis*, of varieties with tall and many-flowered spikes remained pure till comparatively recent years, when *Saundersii* was introduced, and the *Childsii* race was raised by Max Leichtlin. Latterly, however, the tendency of raisers has been more to mingle the races, and in consequence there are in some of the newer Florist's varieties one or more species besides the original four. By intercrossing with the *Childsii* and *Lemoinei* races, *Saundersii* and *Purpureo-annatus*, and probably also *Papilio*, have been introduced. And though as yet I know of no *Primulinus* or *Cruentus* variety that could be classed as a *Gandavensis*, it is only a question of time when these two will also be included among the parent species of the Florist's Gladiolus. It would be very interesting to analyse and estimate the part that each of these species has played in the development of the *Gandavensis* and of the other races, and the particular characters of habit, form, colour, and markings which they have contributed, but for the present I wish only to draw attention to the remarkable change of form in the individual flowers which has accompanied this evolution, and which, I think, is not due to any one species, and, in fact, is not primarily of genetic origin at all, but has arisen rather from general causes, such as high cultivation acting on a plant whose stability or regular order of development has been upset by hybridisation.

The normal flower of the ordinary Gladiolus hybrid—as seen most strongly in the *Pscittacinal* group of species—is *Zygomorphic*. The flowers face all in one direction, and more or less horizontally. The three petals of the outer series are, as usual, larger than the inner series petals, and are approximately equal in size, but the lower petal is always convex, while the two upper side petals are less so—even in the *Saun-*

dersii side-spreading type—and in the *Pscittacinus* type are more or less concave, forming with the top petal a sort of hood to protect the essential organs. The lower petal, also, is always marked with the colouring characteristic of the variety, while the other two are self-coloured.

The three petals of the inner series are unequal in size, and still more so in form and colour. The top petal is nearly, or quite as large as those of the outer series, and is always strongly concave—"hooding"—and self-coloured, while the two lower side petals are considerably smaller, are convex, and are marked or blotched with the colouring characteristic of the variety. It should also be noted that the "blotch" on the bottom petal (of the outer series) is never of quite the same form or so fully developed as on these two lower side petals, though the colouring is approximately the same; but as it lies partly under these two side petals this is all that is necessary for the general effect.

The result of all these modifications of form and colour is a flower which, while keeping the essential organs protected from the rain, presents an attractive face to insects and provides a convenient landing stage for their alighting, indicated by the "signal-patch" or blotch of a different and contrasting colour. And it may be assumed that this *Zygomorphic* form has been evolved from a more simple, regular *Actinomorphic* form by natural selection in response to those requirements. In any large collection of seedlings of mixed Gladioli there will always be found, besides this normal form of flower, three other forms, and often two, and sometimes even three, of these forms may be found on the same spike. For convenience of distinguishing them I will call these four forms:—

1. The *Zygomorphic* or Normal form.
2. The *Reversion* form.
3. The *Actinomorphic* form.
4. The *Semi-peloriata* or Florist's form.

In the *Reversion* form the three petals of the outer series are still larger than the three inner series petals, are self-coloured, and identical in size and form. The three smaller petals of the inner series are also identical in size and form, and are all three marked with the blotch characteristic of the variety. These flowers are always erect—like a *Sparaxis* or *Ixia*.

In the *Actinomorphic* form all six petals are large (as large as the three petals of the outer series of the Normal flower), equal in size and form and self-coloured, forming a lily- or tulip-like flower. These flowers are also always erect. When the flowers of a Gladiolus all face in the same direction, to one side of the stem, the variety is said to be "front facing"; when the flowers face away from the stem, alternately to right and left, with their backs to each other, it is called an "opposite" spike. The Normal and Florist's forms are front-facing; the *Reversion* and *Actinomorphic* forms are opposite, and sometimes even appear to have their flowers facing all round the stem. The second form appears to be certainly a reversion, and the *Actinomorphic* form might also be considered a reversion in colour, but it is a progression in size, and though the modification may not be precisely the same as *peloria* in *Linaria*, for instance, it seems to me to be a phenomenon of the same nature, both in this *Actinomorphic* form and in the Florist's or *Semi-peloriata* form.

The *Semi-peloriata* form—the standard form of the Florist's Gladiolus—is intermediate between the *Actinomorphic* and the Normal forms, and is still *Zygomorphic*. It is of the same type as a *Hippeastrum* flower. Five of the petals are large, of approximately equal size, and self-coloured; the remaining sixth petal is smaller, and is the only one having the markings characteristic of the variety. The flowers face front (all to one side of the stem), but not quite so fully as the Normal form. They face partly horizontally, being more erect than normal flowers, but less so than the *Actinomorphic* form.

But the most remarkable fact about these semi-peloriata flowers is that they are disposed so that the small blotched petal—though it is the same as one of the two small lower side petals in a normal flower—is now the *lowest*. Apparently, therefore, the whole flower has turned through an angle of 60° (one-sixth of a revolution), in order that this blotched petal may fulfil the function (of acting as a signal and providing a landing stage for insects) which in the normal flower is performed by the three lower petals in conjunction. To see if this is really so, it will be necessary to find out how this change from the normal to the semi-peloriata form is brought about.

In some strains, such as *Kelway's* and *W. C. Bull's*, *Souchet's*, and *Vilmorin's*, which have been especially selected for this character, there are many varieties which have every flower of the whole spike uniformly of this Florist's form, or with only occasionally one or two of the flowers of the top of the spike of the normal form. But in less perfected races or those which have been thrown back by the introduction of a new species, there will be a varying proportion of semi-peloriata and normal flowers. In these it is generally, if not always, at the lower part of the spike where the semi-peloriata flowers occur most frequently. If there is only one it will most often be the third, then the first and second. Where there are several there is a tendency for them to occur on the same side of the stem—Nos. 1, 3, 5, or 2, 4, 6. Sometimes they will cross the stem, running 1, 3, 5, 6, 8, 10 (the others being normal) and often they will seem to occur quite at random. Furthermore, the number and positions of the semi-peloriata flowers in the spike of a variety, and even of the same form, will vary from year to year—generally speaking, being fewer when young, or crowded, or in poor soil, and more when at full size and under most favourable conditions. In a few cases I have observed that if the stem of a variety which usually produces all or many semi-peloriata flowers is partly cut through and bent over, the flowers, when they open, will be chiefly, if not all, of the normal form—and some even of the *Reversion* form. *A. J. Bliss*.

(To be continued.)

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.

INDOOR CHRYSANTHEMUMS WITHOUT POTS see p. 11.—While admitting the wisdom of the method of producing blossoms in winter as advocated by Mr. Rowles, I hope that he does not claim originality in the plan, because amongst market growers the method of an improvement on it is as old as the hills. When I say an improvement, I allude to the labour that Mr. Rowles' man entails in wheeling the 3 inch layer of soil into the Peach house and cutting and arranging the necessary planks on edge as a retaining wall. All this is, of course, a considerable work when dealing with 400 plants which occupy much space. When living in Cheshire in 1872 a friend near New Brighton, who grew Cucumbers and Tomatoes largely for market, filled his houses with Chrysanthemums after the usual summer crops were cleared, and utilised the soil in which the Cucumbers had grown, this being suitable for the Chrysanthemums. In this way the labour of carting soil was saved. *E. M.*

—Respecting the article in the *Gardeners' Chronicle*, I endorse all that Mr. Rowles states on the cultivation of indoor Chrysanthemums without pots. It is no new method, but is an excellent one. A large market grower in the North of England, with whom I was engaged for a season, adopted a similar method, and I never saw finer plants of the variety *Niveum*, of which he grew about 2,000. The cuttings were propagated in small boxes, 100 in each, hardened in the usual way, and planted in a skeleton frame. Each plant

was set 18 inches apart in the rows, which were made 2 feet asunder, and supported by a single cane. One good watering, with hoeing as needed, sufficed for the summer. At the end of September (in the North) we lifted the roots, with a large ball of soil, when the buds were set, and transferred them to a large span-roofed house which had previously been used for Cucumbers. They were planted in rows, the ball of soil being covered to the depth of a spade. The plants were again staked with a single cane to each, thoroughly watered, and the house closed for a few days until the leaves had ceased to flag. Afterwards an abundance of air was admitted. By this method the shoots lost only a very few of their bottom leaves, and the quality of the blooms was excellent. The most arduous work is at lifting time, as I know by personal experience. *A. W. Stewart, Downside Gardens, Bristol.*

IRIS STYLOSA (see p. 4).—I was pleased to read Mr. Rowles' remarks on this pretty and useful Iris. It is by far the best of the really hardy winter-flowering plants. Growing under a south wall it is now a mass of flowers, which are, unfortunately, obscured in the old-established clumps by the grass-like foliage, but the blooms form an exceedingly valuable addition to the indoor flowers now in season. Mr. Rowles' experience differs from mine in recommending that the clumps should be left undisturbed for years. By far the finest flowers are produced by plants that have been divided in the previous spring, and I consider it a mistake to leave the plants more than three seasons without dividing them. A word of warning is necessary, for unless well looked after the newly-divided plants will suffer from drought, and copious waterings are always required by plants growing at the foot of a south wall in summer. *F. A. Edwards, The Scouts Gardens, Alresford.*

STERILISING SOIL. (see p. 10).—The title of Mr. Aquilias' article on sterilising soil is likely to be misleading, and may perhaps induce some of your readers to attempt to sterilise soil by "dry heat." My experience in sterilising, and I think that of most others, goes to show that if soil is dried out in the process of sterilisation it is ruined at least temporarily for plant growing purposes, as very few plants will flourish in it for a considerable time after treatment. It would, of course, be possible in the apparatus illustrated to keep the soil moist by covering with some material to prevent evaporation, but the necessity of this should be made very clear. *Chas. E. Pearson.*

APHIDES AND THEIR EGGS. I always follow with keen interest the writings by *A. Southern Grocer*. In his remarks on pp. 203, 357, Vol. LVIII, he suggested that growers might co-operate with him in regard to an investigation as to whether aphid infestation on Apples and Plums arises from eggs on the trees. I am intensely interested in the subject, and observations of my own might assist in the matter, and stimulate others to take notes. It would be especially useful if the observations were taken in different parts of the country, or, at any rate, in the localities where fruit is grown largely. The gardens under my charge are thirteen miles south of Birmingham and 480 feet above sea-level. Our climate may therefore be somewhat different to that where *Southern Grocer* makes his observations, and the aphides may regulate their plans of life to suit the climate. I think it will be agreed that in any investigation of this kind it is necessary to know something of the locality in regard to elevation, rainfall and temperature. If I follow *Southern Grocer* correctly, I take it that he is in very grave doubt as to whether aphid infestation arises from eggs laid on the trees in the autumn. My observations are as follows: On Apples for many years past I have found the black, shiny eggs, and always laid singly and scattered, never in groups or clusters. They are generally laid between the folds on the short jointed shoots or twigs, and therefore partly below the general level of the shoot. They hatch in the spring as soon as the buds start to unfold. So far as I have been able to notice in the gardens

here I am confident that aphid attacks arise from eggs laid in the autumn on the affected trees (Apples). As regards frost, does it kill the aphides? I have had under observation for some time a group of woolly aphides that have lost the greater part of their woolly covering through weather conditions. Yet they survived rain, snow, wind and frost during November. We registered frost on twenty-four nights; on the 23rd of that month it stood at 19°. During November we had seven rainy days, giving a total rainfall of 2.54 inches; the heaviest fall was 1.23 inch on the 12th. From December 1 to the 18th we had frost on seven nights. The lowest temperature was



FIG. 10.—EGGS OF *APHIS SORBI*, $\times 14$ DIAMETERS.

on the 12th ult., when the thermometer registered 22°, or 10° of frost. We had twelve rainy days, including snow on the 13th. The total fall to date is 2.95 inches, and yet my group of aphides still survive and are unaffected, so if these soft-bodied creatures survive such conditions, why should not the Apple or other aphides also survive? With regard to Plum, I find on them large numbers of eggs, but not so many as on Apples. They are more soft and flatter; although the skins are black, they are covered with a layer of almost transparent rodlets. These are not easily defined with an ordinary pocket magnifier,

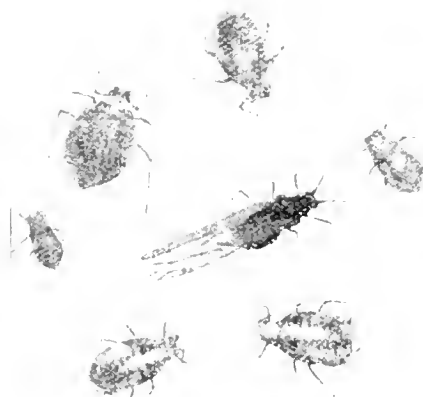


FIG. 11.—*APHIS SORBI*: WINGED AND WINGLESS FEMALES, NYMPHS AND LARVA.

but under the microscope with a magnification of about seventy diameters, i.e., 5,000 times, they are very distinct, and much like the eggs of an insect that I find on a Beech hedge in the gardens every year, with the exception they are not so pointed, and the rodlets are thicker than those that cover the eggs of the Beech aphid. I found a large number of black eggs on *Eucynemes europæus* (Spindle tree) this year that I take to be those of the Bean aphid. I have seen the Rose aphid conulating as late as November 9 on Roses out-of-doors. In the early spring I generally find eggs on the wild Blackberry, but at the present date I cannot find one, although they hatch as early as the end of February. I

think I must agree with Mr. Theobald when he states in connection with his aphididae found in Kent "that these insects are of great economic importance and deserve more attention. At present we know but little of their life cycle, their varied migrations, or of the numerous subterranean forms." When one considers the enormous loss caused by these insects it is strange that they are so neglected; probably this is because of two reasons, (1) that they are most difficult to get named; (2) their bionomics are so abstruse that one dare not call any form a species. *J. G. Blakey, Holmwood Gardens, Redditch.*

THE RULES OF BOTANICAL NOMENCLATURE (see p. 3).—While agreeing heartily with Mr. Flues as to the unsatisfactory state of botanical nomenclature, I doubt whether he has found the remedy. If I understand him rightly, he proposes to disregard the rules of priority and to accept the nomenclature adopted in "a generally accessible systematic work," published by a "competent and careful author." But who is to decide whether an author is competent and careful? Critics will probably disagree, and there will be no finality. Again, additions are continually being made to the data of botany. Our knowledge of species and genera is constantly growing, and fresh discoveries are almost certainly bound to provide the material for periodical revisions of our knowledge. Consequently, if we once admit the personal element and accept an author's names, not because his evidence for them is scientifically exact, and therefore convincing, but because we believe him to be "competent and careful," confusion in botanical nomenclature will only become worse confounded. The remedy for the present confusion seems rather to lie in the closer alliance of botany and horticulture, which would tend to bring about a more general acceptance of the strict rules of botanical nomenclature. Ideal conditions would probably demand that no description of a new species should be finally accepted until seedlings had been raised and grown under varied conditions, in order that some indication might be given of the possible limits of variation within the species. Nothing could well be more futile or baffling to posterity than the system that has hitherto prevailed among botanists of describing a single, and often imperfect, specimen as the type of a species. The care with which the professional botanists give minutely accurate measurements of the various parts of the plant is pathetically ludicrous to the horticulturist, whose experience of plants as they grow has shown him that they vary enormously in size and vigour, according to the conditions under which they are grown. On the contrary, it is rare indeed that a horticulturist is acquainted with the original descriptions of the species of which he grows specimens, or with the herbarium specimens which show the varied development of the plants in the various districts in which it is found wild. The divorce between botany and horticulture seems to be well illustrated by the two following facts. At Kew the more recently acquired plants are usually labelled, not with the exact locality from which they come, but with the name of the nurseryman from whom they were obtained, while at Vincent Square the R.H.S. Scientific Committee, which presumably should deal with questions of nomenclature, does not meet until late in the afternoon, long after the representatives of the horticultural press and the public have seized upon and carried away with them any erroneous name under which plants may have been exhibited. For the present, we can only hope that in the reorganisation of institutions, which must surely take place at the close of the war, some effort will be made to seize the opportunity of forging connecting links between botany and horticulture. The danger, of course, lies in the fact that, while the botanist is quite satisfied with his own superior knowledge, the horticulturist is content with the names under which he has long grown the plants. Consequently the rival authorities make no reciprocal advances, and, until they agree to work together, confusion will always prevail in botanical nomenclature. *W. R. Dykes, Charterhouse, Godalming.*

THE "GARDENERS' CHRONICLE" ABROAD.—It may be of interest to you to know, as showing the wide distribution of your paper, that I have just received from Yokohama a letter pointing out that one of the stone Japanese lanterns, which is incidental in an illustration of my gardens in the *Gardeners' Chronicle*, September 11, 1915, is out of place, and the same mail also brought me a communication from Brisbane referring to this particular article. *Jeremiah Colman, Gatton Park, Surrey.*

"FLORA DOMESTICA"—In his interesting article on gardening books (*Gard. Chron.*, 1915, B, p. 389), Mr. Brotherton is at some pains to show that Henry Phillips (fl. 1798-1829) was not, as Johnson (*Hist. Engl. Gard.*, 305) implies, the author of the anonymously published *Flora Domestica*. It is to be regretted that Mr. Brotherton did not consult Britten and Boulger's invaluable *Index to British and Irish Botanists*, for he would have found data recorded there which establishes beyond doubt Miss Kent's authorship of the *Flora*. Since the *Index* was published its authors have been steadily gleaning information which will be incorporated in the second edition now nearly ready for the press; I have to thank them for placing their manuscript at my service in drawing up the following note. Miss Elizabeth Kent (fl. 1823-30) resided at No. 72, St. Paul's Churchyard, where she gave "young ladies instruction in the science of botany," and had "a thriving garden of pots on the top of the house, not of sickly Geraniums, but of pretty little natives, among them the common Gowan or Daisy." With the idea of stimulating other town dwellers in the cultivation of these plants, she wrote the *Flora Domestica*, "or the Portable Flower Garden; with Directions for the treatment of Plants in Pots, and illustrations from the Works of the Poets." It is dedicated to Sir William Knighton, Bart., "in humble acknowledgment . . . of gratitude and respect," and shows its authoress to have been a well-read and competent horticulturist. Originally published in 1823, a second edition, considerably enlarged, appeared in 1825, and was re-issued in 1831; this has a coloured plate by N. Whitlock. In 1825 she published, also anonymously, a companion volume entitled *Sylvan Sketches*, "affectionately inscribed to her absent sister." In reviewing this work, London speaks of her as the "authoress of *Flora Domestica* and other productions, literary and botanical." She subsequently contributed to London's *Gardener's Magazine*, and to the *Magazine of Natural History*; in her articles in the latter periodical, "Considerations on Botany" (i., 124) and "An Introductory View of the Linnean System of Plants" (i.-iii.), she acknowledges her authorship of the *Flora*. Still another anonymous publication, the preparation of which was due to her, is the third edition of Galpin's *Synoptical Compend of British Botany*, 1829. Her work shows her to have been a most interesting woman, of whom we could wish to know more. *P. G. H.*

SOCIETIES

MANCHESTER AND NORTH OF ENGLAND ORCHID

DECEMBER 16.—*Committee present:* R. Ashworth, Esq. (in the chair), Messrs. H. Bell, J. Cypher, J. Evans, P. Foster, A. R. Handley, D. McLeod, W. J. Morgan, W. Shackleton, S. Swift, H. Thorpe, and H. Arthur (sec.).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cattleya Alex. Ashlands var. (L.C. Tunis x C. Doriana aurea), a well-shaped flower, suffused with peach colour. Shown by R. Ashworth, Esq.

Cypripedium Thora (parentage unknown). Shown by H. J. Bromilow, Esq.

Odontoglossum crispum Luna Umbra, from S. GRATRIX, Esq.

Cypripedium Alcibiades var. Sir Double Haig, a large flower, with dorsal sepal over 3 inches across, from P. SMITH, Esq.

C. Alcibiades var. Thunderer, a large flower, with dorsal sepal slightly waved, and more than 3 inches across. Shown by W.M. THOMPSON, Esq.

AWARDS OF MERIT.

Cattleya Evelyn Sander (Trianae alba x Dusseldorfi Undine), and *C. Dragon (C. Faber x Julesseus)*, both shown by S. GRATRIX, Esq.
Cypripedium Golden Gem (Sanderiae x Antinous), from R. ASHWORTH, Esq.

AWARD OF APPRECIATION.

Cypripedium Walton Gem (Mme. Jules Hy x Earl Tankerville), from W. THOMPSON, Esq.

CULTURAL CERTIFICATE.

To Mr. W. W. FIELD, gardener to S. GRATRIX, Esq., for a batch of *Laelia Gouldiana*.

GROUPS.

The following medals were awarded for collections:—

Silver-gilt Medal to R. ASHWORTH, Esq., Newchurch (gr. Mr. W. Gilden).

Silver Medals to W.M. THOMPSON, Esq., Stone (gr. Mr. J. Howes), the Rev. J. CROMBIE HOLME, Clayton-le-Moors (gr. Mr. E. Marshall), and Messrs. CYRIL AND SONS, Cheltenham.

Bronze Medal to Messrs. A. J. KEELING AND SONS, Bradford.

Obituary.

WILLIAM POPE.—With great regret we learn from Sir Frederick Moore of the death of Mr. William Pope, who had been in the service of the Royal Botanic Gardens, Glasnevin, for forty-six years. Pope was born in 1834, he joined the garden staff at Glasnevin in 1853, was promoted foreman in 1869, and retired on pension in 1899. Mr. Pope's grandfather and father were on the staff when he joined, and he was succeeded by his son Patrick Pope, who therefore represents the fourth generation. Deceased was a skilful cultivator, greatly devoted to his work, and he obtained remarkable success in the cultivation of many classes of plants reputed to be difficult to grow, and with which the name of Glasnevin has frequently been associated. He was well known to many visitors from Great Britain who periodically visited the Botanic Gardens, and who made a point of consulting him about various matters connected with plant growing.

JOHN LYNE.—We regret to record the death, on December 30, 1915, of Mr. John Lyne, until recently head gardener at Foxbury, Cluschnet, the residence of the late H. F. Trinks, Esq. Mr. Lyne retired from active service in September of last year, in consequence of failing health, and settled at Tedworth, near Sarisbury. Previous to his retirement, he had been at Foxbury for twenty-five years. His horticultural career, which began at the early age of ten, had been uniformly successful, and comprised every sort of experience, including nursery work in Messrs. J. Veitch and Son's Chelsea establishment. He was for many years an active member of the committee of the Royal Gardeners' Orphan Fund, in which he took a keen interest. Details of his career were published in the issue for September 4, 1915, p. 153, when we announced his impending retirement. At the time of his death he was in his seventieth year.

GARDENING APPOINTMENTS.

Mr. Henry Butcher, for the past six years Gardener to Sir W.M. COOKE, Bart., R. Hely Hall, Lincoln, as Gardener to the same gentleman at Wyld Court, Hampstead Norris, Berkshire.

Mr. W. Clements, for the past seven years Foreman for S. SMITH AND SONS, nurserymen and florists, Yoxford, Suffolk, as Gardener to C. H. CAMPBELL, Esq., Church Farm House, Spton, near Peasenhall, Suffolk.

Mr. H. Unsted, formerly Foreman at Port Regis, Broadstairs, as Gardener to Sir JOHN LUSCOMBE, Hayheath, Worth, Sussex. [Thanks for 1s. for R.G.O.F. box.—EDS.]

MARKETS.

COLENT GARDEN, January

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—EDS.

Cut Flowers, &c. Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Azalea, white, per doz. bun.	5 0	6 0	Lily-of-the-Valley, per dozen bunches:		
Camellias, white, per doz.	2 0	—	— extra special	24 0	20 0
Carnations, per doz. blooms, best American varieties	2 0	2 6	— special	18 0	21 0
— smaller, per doz. bunches	—	—	— ordinary	—	—
— Carola (crimson), extra large	3 0	4 0	Orchids, per doz.:		
— Malmesbury, per dozen blooms	—	—	Cattleya	12 0	15 0
— pink	10 0	15 0	Cypripedium	2 0	3 6
Chrysanthemums, white, per doz. blooms	2 0	3 0	— Odontoglossum crispum	4 0	5 0
— Red, per doz. bunches	12 0	15 0	Pelargonium, per doz. bunches, double scarlet	8 0	10 0
— Yellow, per doz. blooms	2 6	3 6	Poinsettia, per doz. blooms	10 0	15 0
— Pink, per doz. blooms	3 0	4 0	— Richardias (Arums), per doz.	3 0	4 0
— White, per doz. bunches	9 0	10 0	Roses, per dozen blooms:		
— Bronze, per doz. bunches	10 0	12 0	— Duchess of Wellington	—	—
— Pink, per doz. bunches	8 0	12 0	— Lady Mellingdon	—	—
— Yellow, per doz. bunches	10 0	12 0	— Liberty	4 0	6 0
Daffodils, per doz. bunches	10 0	12 0	— Madame A. Chateaux	4 0	6 0
— Eucharis, per doz.	2 0	2 6	— Melody	—	—
— Freesia, white, per doz. bun.	4 0	5 0	— Mrs. Russell	—	—
Gardenias, per box of 15 and 18 blooms	7 0	9 0	— My Maryland	—	—
Hyacinth, Roman, per doz. spikes	1 6	1 9	— Niphetos	3 0	3 6
— Lageria, per doz. blooms	—	—	— Prince de Bulgarie	—	—
Lilac, white, per doz. sprays	4 0	5 0	— Richmond	4 0	5 0
Lilium longiflorum, per doz. long	3 0	3 6	— Sunburst	—	—
— short	3 0	3 6	— White Crawford	3 0	4 0
— lanceifolium album, long	2 0	2 6	Spiraea, white, per doz. bun.	—	—
— lanceifolium rubrum, per doz. long	2 0	2 6	— Stock, double white, per doz. bunches	—	—
— short	1 6	—	Tuberose, per packet, 24 blooms	1 6	—

French and Guernsey Flowers.

	s.d.	s.d.		s.d.	s.d.
Marguerites, yellow, per doz. bunches	2 0	2 6	Ranunculus, red, per doz. bun.	6 0	8 0
Mimosa (Acacia), per pad	5 0	6 0	— carnation, per doz. bun.	6 0	8 0
Narcissus, paper white, per pad	8 0	10 0	Safrano, Roses, per packet, 24's	2 0	2 6
— Soleil d'Or (Guernsey), per doz. bun.	4 6	6 0	Violets, Parma, large, per bunch	4 0	5 0
— French, per pad	6 0	8 0	— single, per pad, 48-60's	—	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches	7 0	8 0	Fern, French, per doz. bunches	0 6	0 8
Agrostis (Fair Grass), per doz. bunches	2 0	4 0	— common	4 0	5 0
Asparagus plumosus, long trails, per half dozen	1 6	2 0	Galax leaves, green, per doz. bunches	—	—
— medium	12 0	18 0	Hardy foliage, various, per doz. bun.	4 0	8 0
— Sprengerii	8 0	12 0	Honesty, per doz. bunches	10 0	12 0
Berberis, per doz. bun.	4 0	5 0	Lichen Moss, per doz. boxes	15 0	18 0
Carnation foliage, per doz. bunches	4 0	5 0	Moss, gross bunches	7 0	8 0
Croton foliage, per doz. bunches	12 0	15 0	Myrtle, doz. bun. English, small-leaved	6 0	—
Cycas leaves, per doz.	5 0	12 0	— French, per doz. bunches	1 0	1 3
Eulalia japonica, per bunch	—	—	Smilax, per bun. of 6 trails	2 0	2 6

REMARKS.—Business is somewhat quiet, and a general fall in prices (with the exception of Roses) is already

noticeable. Chrysanthemums begin to show signs of finishing. Single blooms are arriving in better condition than the spray varieties. Coloured varieties are scarce. Daffodils are getting more plentiful every day. Tulips are also fast increasing in quantities, and the quality is improving.

Lily-of-the-Valley is now offered at lower prices than hitherto. All Carnation blooms are good and plentiful. A few boxes of yellow and white Narcissus are being received from the Channel Islands in good condition, but the supplies, like those from Holland and France, are very irregular. The mild weather has injured the quality of the French flowers, and a great quantity is found to be useless on arrival. Violets especially are arriving in an unsaleable condition. Paper-white Narcissus and Mimosa stand the journey better.

Fruit: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Apples—		Dates, per doz.	
—Albamarle, per barrel	21 0-25 0	boxes ..	6 6-7 0
—Californian, per box	7 0-8 0	Grape Fruit, per case	12 0-18 0
—English cooking, per bus.	4 0-7 0	Grapes: English, black, per lb.	0 10-2 6
—Nova Scotian, per barrel	14 0-18 0	—Canon Hall, per lb.	4 0-5 0
—Oregon, per box	8 0-12 0	—Muscat, per lb.	3 6-5 0
—Wenatchee, per case	11 0-13 0	—Almeria, per bbl. of 60 lbs.	20 0-28 0
Apriots, Cape, ..	5 0 —	Lemons, per case	13 6-26 0
Bananas, bunch—		Lychees, per box	1 4-1 6
—Medium ..	7 6-10 0	Melons, each ..	1 0-2 6
—X-medium ..	9 0-12 0	Nuts, .. Brazils, new, per cwt.	65 0-70 0
—Extra ..	11 6-14 0	—Coconuts, per 100 ..	21 0-24 0
—Double X ..	12 6-16 0	—Messina cobs, per bag	40 0-44 0
—Giant ..	15 0-18 0	Oranges, per case	16 6-32 0
—Red, per ton	£20 0 —	—Californian Seedless, per case	20 0-22 0
—Jamaica, per ton	£14 0 —	Peaches, Cape ..	6 0-10 0
Chestnuts—		Pears, per case ..	16 0-22 0
—Italian, per bag	18 0-22 0	—stewing, per bus.	3 6-5 0
—Spanish, per bag	12 0-18 0	Walnuts, French, per bag	10 0-12 0
Cocoanuts, per lb.	0 6 —		
Cranberries, per case	12 0-13 0		

Vegetables: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Artichokes, Globe, per doz.	5 0-7 0	Mushrooms, cultivated, per lb.	0 10-1 0
—Jerusalem, per bag	7 0 —	—Buttons ..	0 10-1 0
Asparagus, Paris green ..	2 0-3 0	Mustard and Cress, per doz. punnets	1 0
Aubergines, per doz.	—	Onions, English, per bus.	6 6-7 0
Beetroot, per bus.	2 0-3 0	—Valencia, per case	13 0-14 0
Beans, Madeira, ..	4 0-8 0	Parsnips, per bus.	2 6 —
Brussels Sprouts, per ½ bus.	2 0 —	Potatoes, new:—	
Cabbage, per tally	3 0-4 0	—Algerian, per lb.	0 3-0 4
Carrots, per doz.	2 6-3 6	—Channel Islands, per lb.	0 8-0 10
Cauliflowers, per tally	6 0 —	Radishes, per doz. bun.	1 6 —
Celeriac, per doz.	2 0-3 0	Rhubarb, forced, per doz.	1 0-1 3
Celery, per fan ..	1 0-1 9	Savoy, per tally	6 0 —
Chicory, per lb.	0 6 —	Seakale, per doz. punnets	12 0-15 0
Cucumbers, per doz.	8 0-12 0	Shallots, per ½ sieve	2 6-5 0
French Beans, per lb.	2 0-2 6	Spinach, per bus.	3 6 —
Garlic, per lb.	0 10-1 0	Tomatoes, — Teneriffe, per bundle	10 0-14 0
Greens, per bag ..	2 0 —	Turnips, per cwt.	4 0 —
Herbs, per doz. bun.	2 0-6 0	Turnip Tops, per bus.	1 0 —
Horseradish, per bundle	2 0-2 6	Watercress, per doz.	0 6 —
Leeks, per doz.	2 0 —		
Lettuce, Cabbage and Cos, per doz.	1 0-6 0		

REMARKS.—The chief varieties of English Apples now available are Newton Wonder, Dinnelov's Seedling, and Bramley's Seedling. There are ample supplies of imported Apples packed in barrels and boxes, including all the best-known varieties. The imported Pears consist chiefly of Winter Nels and Easter Beurré from California. Supplies of Grapes are about equal to the demand. Among fruits arriving from Cape Colony, the principal kinds are Apriots and Peaches. Supplies of Teneriffe Tomatoes are increasing weekly. Mushrooms are more plentiful. Guernsey and Madeira French Beans are available, and the quantities of Seakale are increasing daily. Cucumbers are fairly plentiful for the time of year, and Peas are available, but in limited quantities. Supplies of new Potatoes are arriving from the Channel Islands and Algiers. The supplies of outdoor vegetables are generally equal to the demand. *E. H. Rides, Covent Garden Market, January 7, 1916.*

Potatoes.

	s.d.s.d.		s.d.s.d.
Bedford—		Lincoln—	
King Edward ..	4 6-5 0	Eclipse ..	4 6-4 9
Blackland ..	4 0-4 3	Evergood ..	4 3-4 6
Dunbar ..	6 6-7 0	King Edward ..	4 9-5 3
Kent ..		Queen ..	4 6-5 0
Eclipse ..	4 6-5 0	Scotch—	
King Edward ..	5 0-5 3	King Edward ..	4 9-5 3
Queen ..	4 9-5 3		

REMARKS.—Trade is very slow. Prices are lower, especially for tubers of second-class quality. Arrivals are equal to the demand, which is chiefly for the best Potatoes. *E. J. Newbourn, Covent Garden and St. Pancras, January 7, 1916.*

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending January 5.

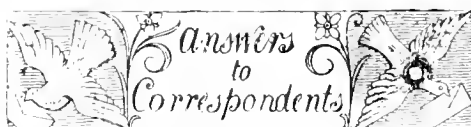
A Very Warm, Wet, and Windy Week.—All the days and nights of the past week were unusually warm for the time of year. On the warmest day (the 1st inst.) the temperature in the thermometer-screen rose to 57°, the highest reading recorded here in January during the thirty years over which my records at Berkhamsted extend. The ground is at the present time 5° warmer at 1 foot deep and 2° warmer at 2 feet deep than is seasonable. Rain fell on five days, and to the total depth of 1½ inch. On the 31st ult. the rain was falling for five minutes, shortly after two o'clock in the afternoon, at the rate of 1½ inch an hour. During the week 6½ gallons of rainwater came through the bare soil percolation gauge and 5½ gallons through that on which short grass is growing. The sun shone on an average for 54 minutes a day, which is half an hour a day short of the mean daily duration for the time of year. On five days no sunshine at all was recorded. The winds were, as a rule, high, and during the night of the 1st inst. the total velocity for the windiest hour reached thirty-three miles, direction W.S.W. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 3 per cent.

DECEMBER.

Exceptionally Warm and Wet.—This was an exceptionally warm December. The highest reading in the thermometer-screen was 55°, and on the coldest night the exposed thermometer registered only 11° of frost—a very high extreme minimum reading for the month. Rain fell on as many as twenty-four days, and to the total depth of 5½ inches, making this, with three exceptions, the wettest December at Berkhamsted during the last fifty-nine years. Snow fell on two days, but the ground was never covered to the depth of more than half an inch. The sun shone on an average for 1 hour 4 minutes a day, which is seven minutes a day short of the usual daily duration of bright sunshine in December. There were seventeen days on which no sunshine at all was recorded. The winds during the first three weeks of the month were as a rule light, but after that they were at times very high, and on one day, the 27th, the total velocity for the twenty-four hours amounted to 555 miles, making this, with three exceptions, the windiest day I have yet recorded here in December. The total velocity for the windiest hour was thirty-one miles, direction S.W. The average amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 1 per cent.

THE UNDERGROUND WATER SUPPLY.

Since the winter half of the present drainage year began in October last, the rainfall at the end of December exceeded the average for the same period in the previous fifty-nine years by 1½ inch, which is equivalent to an excess of 58,231 gallons on each acre of this district. Last year at the same time there was an excess of 96,143 gallons per acre. *E. M.*



CYCLAMEN: *G. M.* The treatment of your seedling Cyclamen appears to be correct, but it is most unusual for them to make such large comas in the time mentioned. The failure of the leaves to develop may be due to over-watering, sour soil, cold draughts, or uneven temperature. Shake the soil from the plants, and pot them afresh in a light compost consisting of leaf-mould, loam, and sand. Afterwards for a week or two keep the soil slightly on the dry side, admitting a little ventilation when the weather is favourable. The plants will not make much growth until the spring, when, provided they are free from disease or insect pests, they should grow satisfactorily.

CYPRIPEDIUM INSIGNE: *L. F. C.* The growing of Orchids in a dwelling-house is not to be recommended; they are rarely satisfactory when grown in this way. The temperature you mention (60°) would be high enough for Cypripedium insigne, which would, in fact, succeed in an average temperature of 50°, but the atmosphere of a dwelling-room is too dry, and lack of sufficient light would also cause trouble. The reason of the flowers drooping and presenting a languid appearance is probably dryness at the root; or perhaps the plants are not deeply enough rooted to stand the strain of flowering. Cut off the withered buds and blooms, and carefully wash the foliage with tepid rain water containing a little soft soap. If the plants have few roots they should be re-potted. Assuming that your variety of Cypripedium insigne is an ordinary one, the value of a strong plant would be only a few shillings. Distinct and rare forms would command higher prices.

NAMES OF FRUITS: *C. S.* Grange's Pearmain.—*L. G. Pike.* Mother (American).—*W. Smith.* Herefordshire Pearmain.—*R. Phillips.* 1, Beurré Bachelier; 2, Claygate Pearmain; 3, King of the Pippins.—*Dr. D.* (A) Passe Colmar, (B) Beurré d'Anjou.—*W. and Son.* Wormsley Pippin.—*D. W. M.* Charles Ernest.

PINK AND YELLOW CHRYSANTHEMUMS FOR FLOWERING IN DECEMBER AND JANUARY: *Chrysanthemum.* We do not know of a good pink or yellow Chrysanthemum that will flower so late as you wish after being lifted from the open ground. In order to secure good late blooms of any variety of Chrysanthemum the shoots must be fairly well ripened. Late varieties planted in the open make, as a rule, an excessive amount of growth during September, and this is prejudicial to good late flowers, the wood failing to ripen properly. We advise potting the varieties you have proved to suit your purpose, and, if it is important to save labour in watering, to plunge the pots two-thirds in the ground. The same remarks apply to the single varieties. Practically all the best single varieties are over early in December, but Commodore is an excellent crimson single for blooming in December.

WALL DAMAGED BY FIG TREE: *T. C.* You should not wait for the damage to get worse, but should endeavour to arrange matters amicably with your neighbour by asking for an indemnity. Failing this, you should dig down in order to see whether your suspicions are confirmed. If so, we consider you would be justified in cutting back the roots to the extreme boundary of your land, which we gather extends to the outer side of your wall. If you waited to claim damages hereafter you would probably be told that you had had the remedy in your own hands, and should have exercised it sooner.

WINTER-FLOWERING BEGONIAS: *G. E. B. M.* Winter-flowering Begonias have passed their blooming period, and the plants should be kept rather dry, in an airy, but not draughty, house or frame until April or May, when they will commence to break into growth afresh. The plants should then be re-potted and brought into a warm house to encourage the development of young shoots. These, when large enough for cuttings, should be severed just below a joint, and inserted in sandy soil, in a propagating case with a temperature of about 70°. Shade the cuttings with sheets of paper, and admit air to the case for an hour, morning and evening. They will root in about three weeks, and may then be potted and grown on. The night temperature should be 60° until the plants commence flowering, when it may drop to 50°. At that stage discontinue damping, and admit plenty of fresh air. These plants are by no means stove subjects; during the flowering season they will grow well in a dry, airy house with a temperature of from 40° to 50°. Watering must be done with great care at all times; liquid cow manure is beneficial as the plants come into flower. The best soil is a coarse mixture of loam, leaf-mould, and sand, enriched with a little decayed cow manure. Mite is the worst pest, and may be kept in check by a mixture of sulphur and soft soap—a teaspoonful of each material to two gallons of water. Begonias of the Gloire de Lorraine type require similar treatment to the above, and excellent plants may be obtained from cuttings. The damping of the leaves is caused by a close atmosphere. Cuttings of these plants do not require a propagating frame; a better plan is to prepare a bed on the stage of a warm house, consisting of a layer of leaf-mould with half an inch of fine ashes on the top. Choose old, ripe leaves, and break them off the plant with the full length of stem. The newer hybrids cannot be successfully propagated from leaves.

Communications Received.—*B. E. W. H.—C. R. A. P.—J. E. H. W. W.—J. C. T.—W. H. W.—J. S. M.—E. A.—W. C.—S. A.—J. A. P.—W. H. D.—B. of A.—P. A.—F. A. E.—E. F.—W. B.—E. C.—F. W.*

THE

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EXHIBITION ONIONS.

THE Onion is one of the deepest rooting vegetables in general cultivation; therefore the soil must be worked to a great depth. A rich supply of food is necessary, but excessive quantities of rank manure are harmful to the crop, causing in some cases thick necks, splitting of bulbs, distortion, and bad keeping. The best exhibition bulbs are grown with only a moderate supply of fresh manure, but in thoroughly trenched soil, and require extreme care in the cultivation with close attention to details.

If the object is to raise bulbs for exhibition, seeds of an approved variety may be sown early in January in pots of good compost finely riddled, nothing being better for this purpose than material obtainable from an old hot-bed, which should be passed through a quarter-inch sieve and a good proportion of sand added. For utility's sake, I prefer six-inch pots for sowing, for at the pricking-out stage the seedlings possess one long, white root only, which is usually about one-third longer than the top growth. On this root the plant depends for its support until fresh roots are produced from the base of the tiny bulb. If pots are used the ball of soil with the seedlings growing in it may be turned out from the pot with the roots intact, it being quite easy to break the ball and to disengage the roots without injury. The most careful operator has a great difficulty in removing seedlings from pans or boxes without injury. Seedlings checked at this stage fail to grow for a considerable time, and sometimes never wholly recover.

Gardeners are often advised to germinate Onion seed in a cool house, and I have tried this method, but have obtained better results from the quick germination

effected by affording a temperature of 65° and covering the pots with shaded glass or brown paper. When about an inch high the plants are removed to a structure where the heat is not more than 55° rising to 60°. The house is ventilated freely, but in such a manner as will not cause draughts. The Onions are ready for pricking off when about 2 inches high, and they should be put at about 2½ inches apart into boxes of rich soil, the hot-bed material again being suitable for the purpose. A good watering should be applied to settle the soil and the atmosphere kept close for a few days. Later the plants will need to be gradually hardened off, and afterwards placed in a cold frame. They should be ready for planting out in mid-April.

The site intended for Onions should be prepared in autumn or early winter. The methods of preparation may seem to some readers a waste of time and labour, but it must be remembered that such cultivation will benefit succeeding crops for several seasons. A moderate quantity of good farmyard manure should be incorporated during the working, and slight sprinklings of basic slag and kainit, if procurable—one part of the latter to three parts of the former material—will be beneficial.

Unless the soil is of a particularly heavy and pasty nature, no hesitation need be felt about bringing the subsoil to the surface, as the weather will entirely disintegrate it; also, the best soil being placed at the bottom will provide a good supply of plant food available in the later stages of growth, when it is most beneficial.

A sprinkling of salt and soot over the surface to be forked in is useful at planting time, which should be as near mid-April as soil and weather conditions will allow. The plants should be put out at 15 inches apart in the row and 18 inches from row to row. When planting, provision should be made for applying water by a supply underground. An excellent arrangement which economises water and labour and permits of the application of water where most needed, whilst discouraging surface rooting, is to sink drainpipes or pots at intervals and to pour water into them at intervals. A very large quantity of water has to be applied on the surface to thoroughly saturate the soil to a sufficient depth, and much of it is subsequently lost by evaporation. Regular weekly hoeings should be practised, thus preventing the growth of weeds, and in dry weather creating a mulch of dry, dusty soil which will hinder evaporation. This answers the purpose on light soils much better than a mulch of decayed manure or other material. It should be remembered that mulchings of manure, although conserving moisture, also tend to lower the soil temperature, a condition detrimental to the growth of Onions, which, being natives of hot countries, revel in intense heat, and in hot conditions thrive amazingly, provided sufficient moisture is available below the surface.

On a well-prepared bed watering or feeding will be unnecessary until the end of June or beginning of July. The only result of watering before this date is to

produce huge foliage, thick-necked specimens which refuse to "bulb," and will split or become bulgy instead of ripening and solidifying.

For feeding purposes nothing is better than diluted sewage water, but liquid farmyard manure, well diluted, or guano water are also excellent foods. If sulphate of ammonia is used, it should not be stronger than at the rate of half an ounce to the gallon of water, and rather less than more is preferable. Take care that the plants do not become dry after watering has commenced, or when water is next applied many bulbs will split. Watering or feeding will be unnecessary after July.

No definite rule can be laid down for the time of lifting. On light soils, such as experienced here, all are ready by August 7; if left after that date the result is a second growth of roots from the bulb, and consequently splitting and distortion. On heavy soils a fortnight or more longer may often be necessary, but no bulb should be left on the bed after the first sign of softness at the neck.

Great care should be taken when lifting not to bruise the bulbs. The loose skin should be carefully removed and the bulbs sponged over, removed to a dry, sunny place, and placed on a soft bed to ripen.

For ordinary use the soil may be prepared as previously advised, and when the weather permits in February or March it should be trodden and raked over, leaving a fine level surface. Sow thinly in shallow drills 15 inches apart. Very little thinning will be necessary. Make frequent use of the hoe. If mildew makes its appearance after cold rains following great heat, one of the best remedies is to spray the plants with a mixture of soft soap, sulphur, and water, allowing two ounces of soft soap and half a pound of sulphur to each gallon of water, all badly affected specimens being first removed and burnt.

E. R. James, Wroton Gardens, Banbury.

MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.***XXV.—BACK TO WOLVESDEN.**

So at length, our tour accomplished, we moved back again over the pass to our palace in the Valley of Rocks and Wolves. It is an astonishing thing just now to watch the appearance everywhere of what I believe to be *Scopodia tangutica*, for its cabbagey noses burst the soil asunder in great clods, after the way of an *Eremurus*, and up it comes huddling, almost as you watch it, like some uncanny green gnome erupting from the cellars of the world. It will in time develop an ample stature, this strange thing, and big urn-shaped capsules; but at present it squats close to the soil, displaying already amid its voluminous foliage the lurid green and brown bells of its blossoms. It is essentially a plant of cultivated land, and its

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 31, November 14 and 28, 1914, January 2, February 27, March 20, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 10, November 13, 20 and 27, December 11 and 25, 1915, and January 8, 1916.

fringes, occurring even round Wolvesden House itself. A little further on, and the air is sweet with the scent of the prevailing *Daphne* (see fig. 16). This is not, I think, the same as last year's, and is, if possible, likely to be even more valuable. It is a neat, small, twiggy bush of about 18 inches, and the flowers are always terminal, never appearing along the sprays, as in last season's. They open



FIG. 12.—MR. REGINALD FARRER'S EXPLORATIONS. Looking down Southerly Beck towards Wolvesden, which lies at the bottom immediately under the near peak on the left.

pale, pinky lilac, but either albinos occur with remarkable frequency or the flowers very soon pass into a clear ivory-white; for ivory-white is the colour of 50 per cent. of the bushes one sees. The scent is very pure and delicious, it has not the heavy metallic tang of most *Daphnes*, but rather sweeps one away on the wings of memory to the China Tombée in June, though this Da Tung *Daphne*, for an exception, is not a plant of the limestone.

But the glory now most urgent for our notice is the *Isopyrum*. Everywhere last year, in all the limestone cliffs, we had gathered what I understand, uncorrected, believed, on the strength of his Veitchian collections, to be *I. grandiflorum*. And a pretty thing it was, with large, waxen flowers of skim-milk white that very rarely passed to a dim blue. And yet I never could help wondering about it. Why had it been described with such ecstasies of enthusiasm—and surely it had also been described as purple-blue? The puzzle could only then be solved by supposing in its collectors a similar generous measure of kind-heartedness to that which so tenderly treated the Wilsonian Brambles. No true collector damns with faint praise, and failing all else, a *Rubus* may have some beauty to rhapsodise over in its rootage, as Katisha had in her left elbow. But there is no such need of charity, I find, to explain the praise of the *Isopyrum*, for all the rocks and grottos and cliffs of the Da Tung Alps are hung with masses of an *Isopyrum*, which I will coldly describe as being among the most beautiful things I have ever seen in my life. It appears (in the lack of specimens for comparison) identical, indeed, with last year's; but the flowers are about twice the size, and of the most gorgeous lavender-purple, often suggesting that that they are thinner in texture) some glorified and exaggerated *Aucumone nemorosa* Allend. And this must assuredly be the genuine *I. grandiflorum*; if not, what name is noble enough for it? I anxiously hope that this

year I may get a sufficient abundance of seed to outweigh the notorious difficulty of raising it. Not, indeed, that germination is so much the difficulty (if the seed be fresh) as the seedlings' intense dislike of being handled or disturbed. Perhaps as good a way as any would be to prick them out when very small into the cliff-crevices that are to be their permanent home. For, let it be remembered, this *Isopyrum* is always and everywhere as absolutely saxatile as *Phytanum comosum*. I trust a photograph may follow later on, to give some notion of the glory that is at present only beginning.

On the high ridges there is still no life, unless it be *Primula blattæa*, glaring amid the pale, dead herbage in violent tones of crimson and purple. *P. blattæa* is last year's *P. No. 8*, the Veitchian *P. "purpurea"*. At least, so I believe, though this plant, absolutely identical in look and habit with *P. blattæa*, seems to be usually of a much redder colouring, often has white powder on scapes and pedicels, and wears a very minute, close pubescence on its leaves which I cannot remember on the more glossy foliage of *P. blattæa*. These, however, are two curious quillies, and I cannot really doubt that the species is the same. It is truly superb, anyhow, in the almost vindictive ferocity of its colouring, that blazes here and there amid the universal cool lavender heads of *P. stenocalyx dealbata*, profusely peppered over the moorland, with *Iris gonocarpa* perking up at intervals. Here and there, too, the huge moony countenance of *Meconopsis integrifolia* still peers amid the brushwood, *Trollius pumilus* (fig. 13) makes little blots of gold in the damp grass, and the lavender of *P. stenocalyx* is repeated in a warmer tone by a neat and perennial (or monocarpic?) stocked *Erysimum*, whose single stem rises to three or four inches, unfolding a shallow dome of rosy

yet to come, though emerging shoots of at least two *Gentians* already rouse my hopes.

In the valley things move faster, and the *Primula* is almost vanished. Big crimson *Paeonies* begin to stud the copse, a large glaucous-leaved *Corydalis* flops its loose pink racemes from the rocks, and the *Rhododendrons* daily advance in splendour. A golden Pea flowered thing abounds in the scrub (it promised sheets of yellow on the plain of Tien Tang Ssu, when the field of hyacinth sweetness should be faded), and the other day our servants brought in a new *Iris*. They brought the whole enormous mass of it (the only specimen at present known to us), to save its blooms from being successively cropped by passing Tibetan shepherd boys, anxious to please us every day with specimens. At first I was greatly thrilled over it, on account of its rich and beautiful colouring, for, though the flower is a trifle thin in design, it is of a soft violet purple, and the fall is of quite special splendour, best to be described as of a purple so velvety and intense as to be almost black, fading delicately at the hem, and flaked solidly (not so much veined or suffused) down the centre with dense creamy white that seems to stand off in relief from the midnight darkness of the ground colour. At present, however, I am inclined to wonder whether it is only the shock of removal that has given those falls such a disinclination to open properly, or whether they always mean to remain screwed up at the end. Also, I wonder whether the great volume of long pointed leaves is not a little rank and excessive for the flowers that poke here and there among them, on scapes not much shorter than the foliage. But perhaps these are both false alarms, to be corrected by sight of an undisturbed mass in full bloom. And, even at the worst, the gorgeous colouring on the fall of *I. sp. "kelaina"* ought to make it of use for breeding. It has a small pervasive fra-

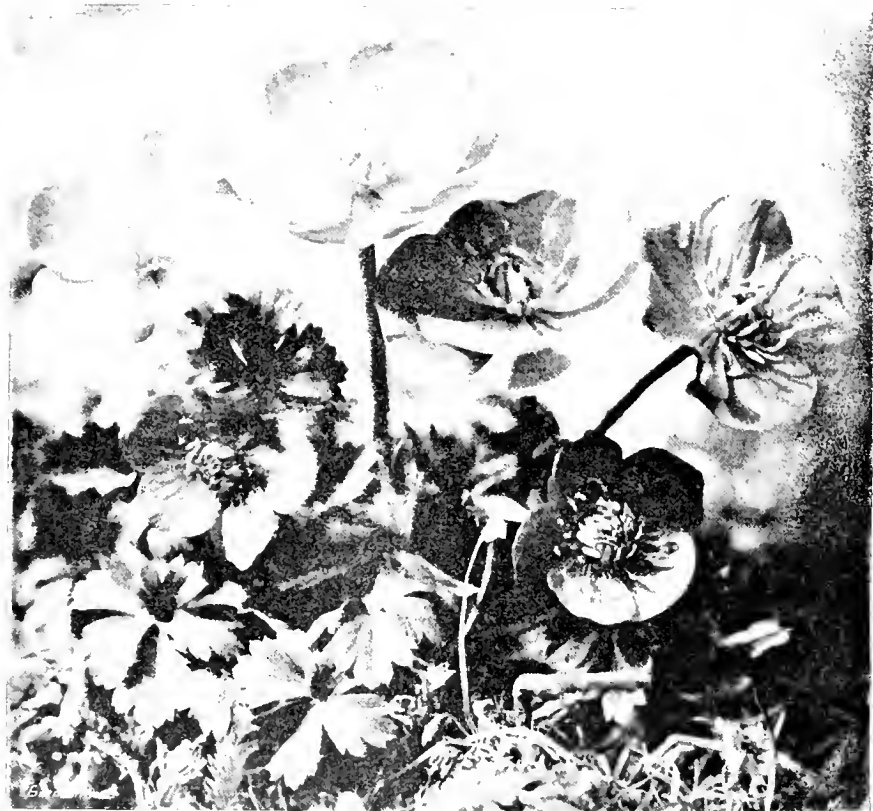


FIG. 13.—TROLLIUS PUMILUS GROWING WILD IN CHINA.

lilac flowers, enhanced by a delicious fragrance of Clove Carnation. These are at present, in mid June, all the flowers of the Alps: the heights above are still in snow, and the huge uplands and arêtes still too securely asleep to give any sign of their more precious children

grance, its pollen is white, and it lives among the hyacinthine *Iris* here on the loess, just below the path-side as you go down the valley. But, as I say, only the one clump has yet been observed, though there can be no doubt that there are others. *Reginald Farrer*.

FINGER-AND-TOE ON SEAKALE.

THE disease of roots of Cabbages, Turnips, and other cruciferous plants caused by *Plasmiodiophora brassicæ* is so well known to gardeners that a detailed description of the symptoms is unnecessary. It is, however, not so well known when it occurs on Seakale, and the object of this short note is to enable growers to recognise it when it occurs, so that steps can be taken to prevent the spread of the disease before the soil becomes badly infected. The accompanying illustration (fig. 14) shows a branched root of Seakale, one arm of which is healthy, the other with the disease in the early stages. The plant was grown on light sandy soil, somewhat deficient in lime. Plants from cuttings of the previous year's growth were not so badly affected as plants of two or more years' standing. The latter made poor top growth, and when dug the roots were much hypertrophied, or reduced to a foul smelling, soft, putrefying mass. Wireworms and other soil insects frequently attack the swellings. If a swollen root is cut across and examined, it will be seen that the vascular central cylinder looks very opaque, and of a distinct grey colour. The cortical tissue frequently breaks away. The most effective way of dealing with the disease is to dress the soil heavily with quicklime (air slaked), at the rate of about 3-4 tons per acre, and to avoid growing cruciferous plants on the affected land for at least four years. This latter, however, is practically impossible in small gardens where space is limited. There the only thing to do is to lime the soil heavily, and remove as many roots as possible. This is rather difficult, as Seakale is deep rooting, and the roots break easily, but the time spent in doing this thoroughly is well repaid. All rotten and affected roots should be burnt at once, the implements used in digging should be disinfected with formalin [1 part commercial formalin to 5-10 parts water], and great care should be taken not to walk from infected on to uninfected land, as the soil carried on the boots of the worker can spread the disease.

Seakale cuttings should, of course, be taken from absolutely healthy plants, or else a fresh stock bought in, and they should be stored during the winter in soil or ashes mixed with lime. When planting out in the spring a little slaked lime should be dropped into each hole before the cutting is inserted. The infected land should be cropped, as far as possible, with more permanent crops, such as Strawberries, bush fruits, etc., and not sown with cruciferous vegetables. Should it be necessary to sow turnips, etc., on doubtful soil, it is as well to scatter lime in the drills shortly before, or at the time of sowing. *D. M. Cayley, John Innes Horticultural Institution.*

THE FLORIST'S GLADIOLUS.

(Continued from p. 25.)

WE may also study the development of the flower from another direction. Just as the embryo in development recapitulates in brief the phyletic stages of the evolution of the race, so we may expect to find in the development of the bud an indication of the order of the evolution of the colour, form, and markings of the variety. If the buds of a spike are successively examined from the top downwards, at a time when the first or lowest is still unopened, in the youngest buds there will be no colour and no markings visible on any of the six petals, the three inner series petals will be alike and unmodified, but smaller than the three of the outer series. (The best varieties for this examination are *Lemoinei* seedlings of Professor Le Monnier and *Eldorado* type, which have a very dark red-brown blotch on a light red or yellow ground, so that the markings can be seen at their earliest appearance.) As older buds, lower down the spike,

are examined, the red or yellow ground colour will become visible, but still with no markings and unmodified. Then in still lower buds the markings will begin to appear (on one, or on two petals), and in this or the next oldest bud the



FIG. 14.—BRANCHED ROOT OF SEAKALE.
(a) Healthy branch. (b) Diseased branch.

modification in size and form of the top petal from the two lower side petals of the inner series can be distinguished.

Apparently, then, this semipetiolate form arises by the modification of, or substitution for, the Normal form, and this change takes place in the flowers at a comparatively late period, and is not determined in the corn before growth



FIG. 15.—CROSS SECTION OF SEAKALE ROOTS.
Upper fig. healthy; lower, diseased.

begins. This view is still further supported by the position of the stamens in these semipetiolate flowers. The stamens in the *Gladiolus* spring from the base of the three outer series petals, or rather from that part of the tube which is the continuation of these petals. They

stand, therefore, at 120° apart on the circumference, and at first they are disposed so that the anther-slits face their respective petals. In the erect flowers of the Reversion and Actinomorphic forms, the stamens in the fully open flowers remain more or less in this position. In the Normal or Zygomorphic form the anthers are disposed in a triple row, with their slits facing front and downwards. In order to attain this position, besides the bending forward, it is necessary for the filaments of the stamens facing the two upper side petals to have a considerable twist, of equal amount about 100° to 120° —and in opposite directions, so as to bring their anthers in line with the anther of the stamen facing the bottom petal, and this twist is plainly visible.

In the semipetiolate form, where one of the inner series petals is now the bottom petal, the whole flower must have turned through a certain angle, and, as will be seen later, in an opposite direction to the twist of the Normal flower. The alterations and readjustments, therefore, of the twisting of the filaments necessary to bring the three anthers into the same position (the position which is the best for fulfilling the function of cross-fertilisation) are very complex. And partly on that account, and partly, no doubt, because the essential organs are more highly specialised structures, and therefore less capable of a sudden large modification (unless, as in the erect flowers, it is a reversion to a form they have once passed through in the course of their evolutionary development), the stamens in these flowers are generally more or less irregularly disposed. The two stamens which spring from the base of the two outer series petals, which are now the two lower side petals, are able to accommodate themselves to the change, which is not large (theoretically 60° , but actually only about 30°), though it is a reversal in the case of one stamen. But the stamen which springs from the petal which is now the topmost would have to twist through 180° to present the anther slits front and downwards. This twist is sometimes actually accomplished, but generally the stamen is only partly twisted, and often simply remains semi-erect at the back of the flower behind the style, and facing the petal.

Further details might be added in support, especially from the observation of flowers where the transition is incomplete, and the results when a variety of a well-established strain of *Florist's Gladiolus* is crossed with a species having strongly marked characters, such as *primulinus*. But these, though of very great interest, are difficult to describe, and the considerations already given afford sufficient grounds to suggest that the change is not primarily or directly a genetic one, that it is a sudden and recent one, and that it is induced largely by the environment. Nevertheless, though the actual form is unfixed, and, I believe, unfixable, the disposition or tendency to produce these semipetiolate flowers is inheritable. *A. J. Bliss.*

(To be concluded.)

CONFESSIONS OF A NOVICE—VII.

IT was some months ago when I promised myself the pleasure of making a confession on the subject of winter-forcing of vegetables. The Seakale, the Chicory and Endive were ready for forcing, and, although my gardener shook his head and advised the cook privately that she had better not rely too confidently on these items for supplies, I regarded this pessimism rather as an example of a subtle form of insurance against risk than as a sure foreboding of failure. I was aware, of course, that if I were possessed of heated frames or houses, I should achieve speedier results; but, nevertheless, so I reasoned to myself—in spite of the lack of these adventitious aids, I am bound to meet with a certain measure of success. For are not beginners proverbially lucky?

FOREIGN CORRESPONDENCE.

HYBRID NERINES.

I SEND a box containing two umbels of hybrid Nerines, which I raised some years ago by crossing *N. undulata* ♀ with *N. pudica* ♂. I should be interested to learn if any hybrid of the same parentage is known in England?

These hybrids show two peculiarities. (1) They are self-sterile, and sterile also with pollen of *N. undulata*. I have not been able to try the pollen of the other parent, *N. pudica*. Sterility is not uncommon in hybrid Amaryllidaceous plants; a batch of hybrid *Hippeastrums* I raised in 1880 from *H. Tettanii* ♀ × *H. reticulatum* fol. vittatis was always sterile. (2) They flower much later than the parents. Under the identical treatment *N. undulata* and *N. pudica* are in full flower with me early in November. These hybrids flower at Christmas, and some also in January. Dr. Attilio Ragionieri, Castello, near Florence, Italy.

[The spikes sent represent an elegant hybrid of the small-flowered class, with white flowers tinged with lilac, and are intermediate in form between the two parents, which belong to distinct sections, *N. undulata* having wavy declinate segments, while *N. pudica* has broader and more equally arranged petals.

Examination of the ovaries show that the hybrid is not necessarily sterile, for healthy, well-developed ovules are present in each. The failure to mature seeds is probably due to defective pollen.

Supposed sterility in *Hippeastrum* has been overcome by the introduction of pollen of a widely separated but distinct species, an instance being *Hippeastrum O'Brienii*, which was obtained by crossing the beautiful form of *H. pardinum*, known as "Dombraius," which could not be fertilised with its own or allied pollen, but produced seeds when fertilised with *H. reticulatum* fol. vittatis, which has seeds quite different in form from the scale-like seeds of typical *Hippeastrum*. Seeds were also obtained from *H. procerum* (the blue *Hippeastrum*, *Gard. Chron.*, July 27, 1912, Coloured Supplement), by crossing it with *H. reticulatum* fol. vittatis, but the seedlings did not develop, although the seed germinated. Nerine undulata has not been much used in recent work of hybridising, the much larger and stronger *N. flexuosa* being selected for preference. Dr. van Herher raised *N. Mitchamiae* between *N. undulata* and *N. curvifolia*, *N. pulchello-undulata*, and *N. humilis-undulata*, and in more recent times *N. Camii* is recorded, as apparently the reverse cross of *N. Mitchamiae*; *N. erubescens*, between *undulata* and *flexuosa*; and *N. roseo-crispa*, the reverse cross of *N. erubescens*. *N. pudica* has not been commonly available for crossing, but *N. O'Brienii* and its many pretty varieties raised between *N. pudica* and *N. Plantii* some thirty years ago, and *N. amabilis*, between *N. pudica* and *N. humilis*, are known.—Eps.]

EXHIBITIONS IN SOUTH AFRICA.—H.M. Acting Trade Commissioner in South Africa (Mr. H. E. GAUNTLETT) reports that, according to information received from the Union Department of Agriculture, it is proposed to hold the following agricultural shows in South Africa during 1916:—Rosebank, February 29-March 3; Bloemfontein, March 21-24; Johannesburg, April 24-29. In most shows of this class facilities are offered to manufacturers or agents to exhibit and demonstrate the working of machinery, etc. Communications in this connection should be addressed to the Secretary, Agricultural Society's Show, Rosebank, South Africa, or as the case may be.



THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

SPRAYING.—There are several good washes for spraying fruit trees; for neglected orchards an alkali spray is strongly to be recommended. If sprayed thoroughly over every part of the tree it will destroy all mosses, lichen growths, and many insect pests which lurk in the crevices and rough bark of neglected trees. There are excellent spraying machines on the market, and if many trees are to be treated, a machine sprayer will prove a good investment. Choose a calm day for the work, for when the wind is high much of the spray fluid is wasted. The older method, which was extensively practised before spraying became general—that of throwing a quantity of lime through the branches on a still, damp day—has still much to recommend it. The lime cleanses the branches of moss and other foreign growth, and when washed off by the rains is of great benefit to the roots. Where poultry, sheep, or other stock is kept in orchards, there is not such need for regular manuring, but a dressing of lime after the trees have been pruned and sprayed is very beneficial.

YOUNG TREES.—In orchards where the trees have been pruned regularly, the routine is simple. A good foundation for the tree having been laid in previous years, and the trees kept thin and moderately shortened each season, they will have strong, firm branches practically studded with fruit spurs their whole length. All that is required is to shorten any shoots not required for extension, remembering that the growths must never be crowded. If the trees have borne heavy crops, manure should be used in moderation, after forking the soil lightly under the trees.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major Hoare, Ellisfield Manor, Basingstoke, Hampshire.

PROPAGATING THE STOCK OF BEDDING PLANTS.—By this time the gardener should know approximately the number of plants he requires of each species and variety for summer bedding. There is no more interesting pastime in the long evenings than working out new bedding schemes or improvements on those hitherto practised. Armed with this knowledge the grower is enabled to work up sufficient stock to meet his needs with the usual margin for safety. I refer especially to Zonal and Ivy-leaved Pelargonium, Calceolaria, Lobelia, Marguerite, Heliotrope, Ageratum, Salvia splendens, *S. patens* and similar subjects of a tender nature; also border Chrysanthemums. Roots of the Chrysanthemums should be planted in boxes and brought into a warm house or pit for the purpose of obtaining a supply of cuttings which are easily rooted in a propagating case filled with pure sand. By using sand for cuttings of these and all other soft-wooded plants I find that they root more quickly, are less likely to damp off and may be potted or boxed up without damaging a single root. Moreover, the sand can be used over and over again. Much labour is also saved, for the cuttings may be rapidly pressed into the wet sand. Immediately the cuttings are inserted they are well watered to settle the sand close against the stems of the cuttings. If more stock of any particular variety of herbaceous Phlox is required a few roots should be brought into a warm house. The shoots for cuttings may be pulled off and dibbled into the sand as they become available. Last year I put into a vinery on January 28 three plants, each about the size of the palm of one's hand, and was able during the spring to raise from them 293 plants for the purpose of filling a border. Of these I have now 270, which should flower much better during the coming season.

So we embarked on the adventure. The Seakale was "earthed up" with a mixture of ashes and light soil. The Chicory was transplanted in cold frames, the glass of which was covered with straw and leaves. Cloches were placed over the Lettuces in the sunny southward-facing beds. The Dandelions were covered by means of boxes blackened inside.

No longer, alas! a child, I did not commit the infantile error of precipitancy, but waited in cheerful confidence until the Endives, white and curly and succulent, should be ready for the salad. Then on one fine morning, almost the only fine morning that this winter has vouchsafed to us, I proceeded to examine and garner in my first forced crop.

The frame was opened. The Endive was not there. It had vanished. This was more than even the gardener—in his most pessimistic moments—had apprehended. We gazed at one another, I speechless, he monosyllabic. "Rats," he said; and rats it was. A cleaner job could not have been made by locusts.

Then it was that I congratulated myself on my forethought; for other of the Endive had been left in the ground, nearly covered with large flower-pots the holes of which had been stopped. We turned to them, and on removing the pots I found a sodden mass of limp foliage, on which slugs of all sizes had undoubtedly been feasting. It was impossible to be annoyed with the slugs, for had I not read again and again in these pages the advice from the pens of experts, "Take precautions against slugs by sprinkling soot and lime about the plants"?

No more tactful man exists than my gardener, and, to dispel my gloom, he drew my attention to the Celery and Brussels Sprouts. "We could have won a 'Daily Mail' prize with them if they had held a show in winter; that Celery ought to be called Nelson's Monument." We had a pleasant talk on the subject of Celery, and as we talked he was leading me away towards the new Rose beds; but I, intent on discovering how the other crops had fared, edged towards the Seakale. Observing my direction, the gardener remarked, "The postman never will shut the gate after him." This time it was—or purported to be—rabbits. In any case the Seakale had as surely lost its head as I my equanimity. "But surely rabbits don't burrow under ashes after Seakale," I asked. "You never can tell till you've lost it what these vermin will eat; but perhaps it was a hare. A pity we did not lift them and do them in those forty thieves pots you told me of." A description of Seakale forcing pots which made the sun shine again for me. A glance at the Chicory—best of all winter-forced vegetables—was sufficient to complete the tale of failure. Evidently rats do not like Chicory, but they appear to object to our cultivating things they do not care about, for they had laid them out in rows; like pallid sleeping ghosts those plants appeared. The Dandelion had grown, and the rats had spared it, but the covering of leaves was too thin or else there were chinks in the frames; in any case, it was greenish, although, as a matter of fact, none, or not much, the worse for that. But what a lot of Dandelions go to one salad! Seeing me sorry the gardener became quite grimly cheerful. "Next year," he said, "we'll force them. Now I know they can grow in the dark, I'll keep the vermin out if I have to box them in the garage." Here the vestry roadman appeared with a load of road sweepings, and the gardener went off to show him where to tip it, remarking as he went, "I never make two messes of a job." Was he referring to the dumping, or was it a promise? In either case it is true, for he is one of those men, not rare in gardeners, who have the gift of learning swiftly from one lesson of experience. He makes mistakes, because a particular experience has not come his way; but he never makes stupid mistakes. Would that the same could be said of his master and friend. I. N.

A GARDEN DIARY.—I would strongly emphasise the great value to all who own or control a garden of recording in a suitable diary everything of importance that happens in the garden. Not only should the work done be recorded, but the dates of the first appearance of flowers, when they are at their best, and when they fade, with observations which are important but would burden the memory to retain. We shall thus be able to trace the behaviour of every plant, and the lessons of success or failure are more valuable when these data are available. No gardener needs a diary to know what to do in the garden, but the association of plants and colours in the beds, the borders and the rock garden can be better projected by its aid even at a time when the plants are not in flower. Easy reference is assured by leaving a margin in which is written the subjects treated of each day.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NENBURNHOLME, Watter Priory, Yorkshire.

POT VINES.—Pot vines are the most suitable for very early forcing, and the more forward specimens are well on the move. Let the forcing be done as much as possible during the day-time. Replace the fermenting material if the heat has declined, for this is better than using much dry fire-heat; moreover, the hot-bed will stimulate the growth of the roots and create a natural atmospheric moisture. Let the work of disbudding and stopping the shoots receive proper attention as it becomes necessary. Overhead syringings should be discontinued as soon as leaves have developed, but the walls and all other bare spaces should be damped as often as is necessary. Let the temperature range from 55° to 60°, according to the weather, until the vines come into flower, when it should be raised to 65° to 68° by night, with a suitable increase by day. Remove all surplus bunches, leaving one only on each lateral, and do not be in too great a hurry to tie the shoots, but keep the growing points from the glass. Although growth must not be crowded, endeavours should be made to get the trellis-work well furnished with healthy foliage. Pay careful attention to watering the roots, using tepid water only for the present; later the roots may be given weak liquid manure and other stimulants.

PERMANENT VINES.—The general treatment recommended above for vines in pots applies, in a great measure, to early permanent vines. The night temperature in houses just started may range from 45° to 48°, increasing the warmth as the vines advance in growth, but do not practise hard forcing in the early stages. See that the borders are in a suitable condition of moisture, watering with tepid water when necessary. Admit a little air on all favourable occasions. The early Muscat house should be closed if this has not been done already, so that it will produce ripe Grapes in July.

THE ORCHID HOUSES.

By T. W. BRISQOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chesham, Gloucestershire.

WINTER-FLOWERING CYPRIPEDIUMS.—The winter-flowering *Cypripediums* constitute a useful group of Orchids, and, being easy of cultivation, may be recommended to the amateur and the gardener who does not possess a special Orchid house. The best of the class is *C. insigne*, the varieties *Sanderæ*, *Sanderianum*, *Harefield Hall*, *Laura Kimball*, and *Chantini* being especially good. The hybrid *C. Leeanum*, with its varieties *Corona* and *Clinkaberryanum* are very useful, while *Thalia*, *Mrs. F. Wellesley*, *Arthurianum*, *nitens*, *Actæus*, *langleyensis*, *Elatior*, *Pyramus*, and *Hitchinsiae* might well form the nucleus of a collection. *C. Fairieanum* hybrids constitute another dainty section, the flowers being smaller and the plants less in stature than the more robust progeny of *C. insigne*. In consequence the plants do not require such large pots; a little more drainage may be used, and not quite so much loam in the compost. Directly the flowers are removed repotting may be commenced, but every plant will not need attention the same year. Those that are in good

health and are not pot-bound may be left for another season. Large specimens, and especially those of the *C. insigne* type, require overhauling thoroughly when they show signs of decreased vigour. This often becomes apparent when the plant has been left undisturbed for a number of years. In such cases the roots should be turned out of their pot, pulled to pieces, dead roots and useless growths cut away, and fresh specimens made by placing several portions in the same receptacle. Only the leading portions should be retained, discarding all growths more than a year old that have flowered. If necessary to increase the stock, the old growths may be placed in small pots; they will form new shoots as the days lengthen. Plants that are in small receptacles should be repotted into larger ones without unduly disturbing the roots. The pots should be filled about one-third their depth with drainage material, covering the crocks with a thin layer of rough fibrous loam. The rooting medium should consist of two parts best fibrous loam, and one part peat or *Osmunda* fibre, lightened with a sprinkling of crushed crocks. For the larger and more vigorous specimens remove all the fine particles of the materials, to keep the compost in a lumpy condition. For the weaker growing species and hybrids use the soil in a finer state of division, and add a few more crushed crocks. Make the compost firm around the base of the plant, and the surface must not be above the rim of the receptacle. When the operation is completed water the roots with tepid rain-water by means of a fine-rose can. For a few weeks afterwards little direct watering is necessary, but the plants must not suffer from lack of moisture, and to this end their surroundings must be kept moist. Little ventilation is needed until the roots commence to grow. As the days lengthen, and the sun becomes more powerful, protect the plants from direct sunshine, and spray them lightly overhead. Just before the plants are repotted water them thoroughly, and if the roots adhere firmly to the sides of the pot, the latter should be broken, and the roots detached without injury. In many collections a house or division is set apart for *Cypripediums*, and where large numbers are grown this is the best method to adopt. The temperature should fluctuate between 55° and 60°, but with sun heat it may rise 5° or 10°, in fact the extra warmth will benefit the plants considerably, provided that they are not exposed to direct sunlight for any considerable length of time. Few insects with the exception of thrips trouble *Cypripediums*. Thrips may be kept in check by periodical vaporisings.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WASTAGE, Lockinge House, Wantage, Berkshire.

ROSES IN POTS.—A batch of pot Roses may be placed in a light house near to the roof-glass to furnish early blooms. Cut out the useless shoots and slightly prune the remaining growth. When the buds burst admit air with great caution, for cold draughts are very harmful. The roots must be watered with care, or mildew will quickly appear. As a precaution against this pest dust the foliage lightly with flowers of sulphur. For the first two or three weeks a temperature of 50° is ample; an excess of fire heat must never be employed. To have a regular supply of blooms place a fresh batch of plants indoors at fortnightly intervals.

CHRYSANTHEMUMS.—The main batch of *Chrysanthemum* cuttings should be inserted by this date. Varieties which are shy in producing suitable shoots for the purpose should be placed on a shelf in a Peach house orinery which has just been started. Remove cuttings which have rooted from the propagating case and place them on a shelf in a cool house, but do not let them be subjected to cold draughts.

CYCLAMEN.—Plants of *Cyclamen latifolium* which are in bloom need careful attention in order to prolong their season of flowering. Those which are used for the decoration of the dwelling should be changed once a week. The *Cyclamen* needs much water when in full flower, but not stimulants. Seedlings raised in the

autumn should be potted into thumb pots or pricked into pans or boxes filled with a light compost. These young plants must be kept growing gently in a house having a moist atmosphere and a temperature of about 60°. It is beneficial to the plants to plunge the pots in fibre or similar material; failing this, they should be stood on a moist bottom near to the roof-glass. Spray them with rain-water twice daily during fine weather.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wootton Abbey, Banbury, Oxfordshire.

BROAD BEANS.—Make a sowing of Broad Beans in boxes filled with light soil to furnish plants that will produce pods early in the year. Place the seeds 2 inches apart, and an inch and a half deep. Stand the boxes in a cold frame, which should be kept closed until the seeds have germinated, but afterwards it should be ventilated freely, and as the plants develop endeavour to keep them hardy and sturdy. They should be ready for planting by about March 10. These plants will frequently mature their pods as early as those sown in the autumn batch, and sometimes earlier. Beck's Green Gem is a variety to be recommended.

FRENCH BEANS.—If a succession of French Beans is required, make fortnightly sowings from now onwards. Sow the seeds thickly in boxes containing light soil, and transfer the seedlings to pots when they have developed two good leaves, allowing six plants to each 8 inch pot, which is large enough for this batch, although 9 or 10 inch pots are more suitable for later plants. A similar compost to that advised for Peas on p. 5 is suitable. Transplanted Beans generally crop a few days in advance of those sown direct in fruiting pots, and greater regularity of cropping is assured, whilst the plants will not need a top-dressing. The temperature should range from 60° to 65°. Syringe the plants daily to maintain a constantly humid atmosphere, which is necessary to prevent infestations of red spider. When the plants become pot-bound feed them once a week with a concentrated fertiliser, or bi-weekly with applications of diluted liquid manure from the farmyard. *Oshorne's Forcing* is a suitable variety for the two first batches, but for later sowings choose one of the free growing, larger sorts.

SEA KALE.—This vegetable may be forced in a similar manner as Rhubarb, but darkness is essential to obtain well blanched hearts. Some of the roots should be broken off when the plants are lifted to furnish "sets" for next season, and they may be prepared for planting during bad weather. The "things," as they are termed, should be cut into portions 5 inches long, the upper end being cut square and the lower obliquely. When prepared the sets should be tied into bundles and placed a few inches deep in soil, in an upright position, in a cool spot, in readiness for planting early in April.

THE "FRENCH" GARDEN.

By P. AQUATAS.

The deficiency of autumn-sown Onions and early Cauliflower plants, which suffered much in November, should be made good by early sowings in January.

Broccoli should prove a valuable crop where ground is available, and where plants can be well grown in nursery beds they could follow an early crop of Potatoes lifted by the middle of July.

Brussels Sprouts are also worthy the attention of the grower who has ground available. If this crop is sown directly in the ground at the end of February or early in March, it will save extra labour, and the plants will do better than those transplanted, especially in light land.

Horseradish well deserves the attention of growers. Germany has had most of the monopoly of this crop, which is of easy cultivation. Set in March it only requires the ground until about the end of June, and it can be lifted as needed for market from the end of September till the following March.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would oblige by sending in their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Special Notice to Correspondents. — The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News. Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early as the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations. The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 38.7.

ACTUAL TEMPERATURE:

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 13 (10 a.m.): Bar., 29.9; Temp., 47°; Weather—Sunny.

SALES FOR THE ENSUING WEEK

MONDAY AND WEDNESDAY

Rose Trees, Shrubs, Perennials, Bulbs, &c., Stevens & Sons, 38, King Street, Covent Garden, at 12.30.

MONDAY, WEDNESDAY, AND FRIDAY

Dutch Bulbs, Lilies, &c., at 12, Shubs, Roses, Herbaceous Plants, &c., at 1, by Protheroe and Morris, 67 and 68, Cheapside, E.C.

WEDNESDAY—

Miscellaneous Bulbs at 1, 450 c's Japanese Lilies, at 5, by Protheroe and Morris.

THURSDAY—

Roses at 1, by Protheroe and Morris.

Gladiolus Hybrids

THERE are few species which lend themselves so readily to hybridisation as do those of the genus *Gladiolus*; and, although the forms which have been produced by crossing are numerous, the history of their origin is perhaps better known than is the case with many, or, indeed, most hybrid races.

This is perhaps due to the fact that many of the species themselves are both good horticultural plants, and possessed of strongly-marked characteristics, some of which, at all events, are manifested in the hybrids to the formation of which they contributed. Hence the story of the descent of the modern races of *Gladiolus* is one of considerable interest to scientific horticulturists. This story Mr. Alfred C. Hottes, of the Department of Floriculture, Cornell University, relates in the *Journal of Heredity*.*

Although hybrid *Gladioli* were in cultivation so long ago as 1810, their number was but few. Of them *G. Colvillei* and *G. ramosus* were perhaps the best known. *G. Colvillei*, with bright red flowers marked with pale purple and white area in the throat, is a hybrid between *G. car-*

dinalis and *G. tristis* var. *concolor*. The parentage of *G. ramosus* is more mixed, and is believed to derive from unknown hybrids of *G. cardinalis* crossed with *G. oppositiflorus* — a tall, many-flowered Madagascar species characterised by white flowers, the throats of which are striped with amethyst. It is recorded that in 1837 Beddinghaus, gardener to the Duke of Arenburg, had *ramosus* hybrids growing on the estate in Engheim, as well as the Parrot *Gladiolus*, *G. psittacinus*. With the advent of the Ghent race, *G. gandavensis*, mystery, which cloaks the origin of all things, descends upon the *Gladiolus*.

According to some authorities, *G. gandavensis* resulted from crossing *G. cardinalis* and *G. psittacinus*. Dean Herbert, who failed to repeat this cross, held the view that the parents are *G. psittacinus* and *G. oppositiflorus*. Mr. Hottes is of opinion that *gandavensis* is derived from the hybrid *G. ramosus* (= *G. oppositiflorus* × *cardinalis*) crossed with *G. psittacinus*. This race was further improved by selection, and was used for hybridisation by Souchet, gardener to Napoleon III., as well as by other horticulturists. Victor Lemoine assisted in the beautification and mongrelisation of the genus by crossing *gandavensis* with *G. purpureo-auratus*, which species has bell-shaped, rather hooded, pale yellowish-green flowers, marked on their lower segments with diamond-shaped blotches of maroon. The resulting hybrids constitute *G. Lemoinei*, in which Mr. Hottes traces characters contributed by *psittacinus* (rich petal colour) *purpureo-auratus* (blotch, hardness and graceful stem) and *oppositiflorus* (vigour, erectness and perhaps the large number of flowers).

Lemoine also introduced the beautiful *G. Saundersii* into the *Gladiolus* combine, and thus obtained in 1862 his Nancianus hybrids. The more recent Childsii hybrids are derived from crosses between *G. Saundersii* and *gandavensis* made originally by Max Leichtlin. These hybrids passed first into the hands of Mr. V. H. Hallock, who, after ten years of improvement and hybridisation, disposed of them to Mr. J. L. Childs. *G. turicensis* is of similar origin. To the Amaryllis-like, deep red variety princeps Mr. Hottes ascribes the parentage Childsii and *G. eruentus*.

More recently the species *G. primulinus*, which grows in the spray of the Victoria Falls of the Zambesi, was introduced through the instrumentality of Sir Francis Fox, and the hybridist was quick to see the advantages to be derived by throwing into the *Gladiolus* melting-pot this species, with its pale primrose, scented and hooded flowers. It exerts a sobering influence on exuberant colours, and as a result the hybrids resulting from its use have soft and pleasing shades.

Lastly, it is to be noted that the blue colours are, so it is claimed, derived from the use of another species, *G. Papilio*, wherein this colour is disguised as a pale purple. This species, used by Lemoine in combination with *G. Lemoinei*, gave him a series of more or less blue forms.

WAR HORTICULTURAL RELIEF FUND.

managers of the Hongkong and Shanghai Banking Corporation have sent to the Royal Horticultural Society a cheque for £186 8s. 9d., being the amount remitted by the Shanghai Horticultural Society for the War Horticultural Relief Fund.

ROYAL METEOROLOGICAL SOCIETY.—A meeting of the Royal Meteorological Society will be held at the Surveyors' Institution, 12, Great George Street, Westminster, on Wednesday, the 19th inst., at 7.30. Major H. G. LYONS, F.R.S., will deliver an address on "Winter Climate of the Eastern Mediterranean."

RETIREMENT OF MR. F. BEDFORD.—Mr. F. BEDFORD has retired from his position as gardener at Straffan, Co. Kildare, where he had been for the past forty years. Mr. F. STREETER, formerly a foreman in the same gardens, will succeed Mr. BEDFORD as head.

WAR ITEMS.—The late GEORGE B. M'EWEN, 10th Battalion Australian Imperial Force, who was killed at the Dardanelles, was the son of Mr. ALEXANDER M'EWEN, gardener at Pirniehill, Drymen, and was twenty-one years of age.

—We have received from Messrs. KELWAY AND SON, of Langport, Somerset, a list of those of their employees who have joined the colours. These include a good many who were already in the Army or Navy before the outbreak of war. The list comprises in all over a hundred names, and records the death in action of several of those mentioned.

—Mrs. R. N. HOOPER, Chipping Sodbury, Gloucester, is offering the Stanlawes Court collection of Orchids to be sold entirely for the benefit of the joint societies of the British Red Cross and the Order of the Hospital of St. John of Jerusalem in England. Messrs. A. J. KEELING AND SONS, Westgate Hill, Bradford, are acting as agents, and have prepared a priced catalogue which may be had from them on application.

SWEET PEA ANNUAL.—The annual publication of the National Sweet Pea Society has just reached us. It is well printed on art paper, with numerous good, clear illustrations, and strongly bound in a neat dark-red cloth cover. The *Annual* has been published this year in peculiarly sad circumstances, for in the autumn of last year Mr. F. W. HARVEY, the editor of the *Annual*, and one of the keenest collaborators, died after a brief illness. A short preface by the Rev. J. JACOB expresses in sympathetic terms the value and respect in which he was held by his colleagues. The volume is filled with interesting and instructive articles and illustrations. A fair amount of space is devoted to foreign news, a very useful and serviceable feature, and likely to aid in promoting an international understanding between Sweet Pea lovers all over the world.

"SEASONABLE HINTS."—The energy and enterprise shown by the officers of the Dominion of Canada Experimental Farms are both great and commendable. Their latest manifestation is the issue of a series of pamphlets entitled "Seasonable Hints," and containing miscellaneous suggestions for farmers and gardeners. Thus in the section of Horticulture (No. 5, November, 1915) Mr. MACOIX writes on the winter protection of Strawberries, Grapes and Roses, and the protection of fruit trees from mice, and Mr. FRANK T. SHUTT writes of the store of humus in the soil and on the management of the compost heap. It speaks well for the fostering care with which the Dominion watches over the development of agriculture and horticulture that the energies of the chief officers of the Dominion Farms at Ottawa are directed to the writing of these "Seasonable Hints," but it may well be doubted whether the issue of such information might not be better entrusted to the staffs of the outlying stations scattered over the several provinces of

the Dominion, thereby setting the chief investigators at Ottawa free for work on the larger problems of Canadian horticulture and agriculture.

SULPHATE OF AMMONIA IN WAR TIME.—The Board of Agriculture sends us the following letter which has been addressed to the Editor of *The Times* by the Chairman of the Committee on Fertilisers with reference to an article which appeared in that paper on the 20th ult. headed "Feeding Stuffs for Neutrals: Farmers' Suspicions," in which it was suggested that the agricultural industry was being prejudiced by

feeding stuffs should be allowed to be exported until home requirements are fully met, I cordially agree, and I may add that this is precisely the policy which the Board of Agriculture has adopted since the outbreak of war. On the other hand, I deny with confidence the allegation that the claims of agriculture are, or have at any time been, "set aside in an unintelligible desire to propitiate either commercial or foreign interests." The Board arranged in August, 1914, to collect monthly returns of the stocks of feeding stuffs and fertilisers, as well as of food stuffs in the United Kingdom, and these returns have enabled us to watch very closely the actual supplies avail-

what must be considerably more than four times their usual quantity if exports were entirely prohibited? This would involve their spending about six million pounds on this one artificial measure, which is really unthinkable in the present agricultural circumstances. Or is it suggested that the same quantity would be produced if the market were restricted to the home demand? It is true that sulphate of ammonia is to a large extent a by-product of gasmaking. But I understand that it is possible to make gas and at the same time considerably to reduce the production of sulphate of ammonia, and that this might be done if the supply were to exceed the demand over any considerable period. In that case the price of gas would rise, and the farmers would get no more fertiliser. This aspect of the matter is worth consideration by those who advocate prohibition of export not so much in order to secure ample supplies, but in order to lower prices. The effect of prohibition of export upon the Scottish shale oil works and the coke ovens of the North of England ought also to be considered. Subject to the farmers' supplies being ample, the position of such industries is surely a matter for thought and attention.

With regard to supplies, the Committee proposes to act in the future on the same general lines as in the past—namely, by an arrangement with the makers of sulphate of ammonia to reserve monthly mouth an ample supply for agricultural requirements, and to assent to the export from time to time only of such quantities as are shown to be in excess of all home demands. Farmers have an entirely reasonable expectation of being able to obtain during the coming months an ample supply of all fertilisers which can be produced here in sufficient quantities. This expectation should not be encouraged to degenerate either into a groundless belief that such supplies will not be available, or into an unreasonable demand that all exports should be stopped—however ample the supplies may be which will be retained here. The farming community would show that good sense which, if I may say so, has generally characterised their attitude during the war, by looking into this question in the light of the available facts and figures, rather than by agitating in the manner which your correspondent suggests, without having the essential outlines of the subject before them.—Yours obedient servant,

F. D. ACTON.

LIME TREES BLOWN DOWN AT SHREWSBURY. We learn from the Superintendent of the Shrewsbury Parks that during the recent gales eight of the Lime trees which form the famous avenue in the Quarry Park were blown down. These trees, in number between three and four hundred, are nearly two hundred years old. They are of unusually large size, but unfortunately they have of late years become decayed, and many are liable to fall under any special strain. A short time ago an effort was made to save them from further decay by removing all dead branches, draining the cavities in the trunks, and filling them with sand and cement. In some cases this treatment was successful, but others were already too far gone, and were unable to withstand the severe gale which has laid them low.

PUBLICATIONS RECEIVED.—*Inventory of Seeds and Plants Imported by the Office of Foreign Seed and Plant Introduction During the Period from April 1 to June 30, 1913.* (Washington: Government Printing Office.)—Bulletin 74 of the Michigan Agricultural College Experiment Station, Division of Chemistry, *Analyses of Materials Sold as Insecticides and Fungicides.* By A. J. Patten and D. C. Kellogg. (East Lansing, Mich., U.S.A.)—*Narcissus poeticus and Its Allies.* By H. W. Pugsley. B. A. Supplement to the *Journal of Botany*, 1915. (London: West, Newman & Co.) Price 2s. 6d.—*Horticultural Directory and Year Book for 1916.* (London: 10, Essex Street, Strand.) Price 1s.—*The Fruit, Flower and Vegetable Trades' Diary and Compendium for 1916.* (London: Lockwood Press.) Price 2s. 6d.



FIG. 16.—MR. REGINALD FARRER'S EXPLORATIONS: DAPHNE SP. GROWING WILD NEAR WOLFESDEN. (See p. 30.)

the special exportation of sulphate of ammonia which the Government were allowing:—

Sir,—The article in *The Times* of the 20th ult., under the heading of "Feeding Stuffs for Neutrals," deals at some length with the subject of sulphate of ammonia. As I am the chairman of a Committee appointed by the President of the Board of Agriculture and Fisheries to take such steps as may be possible and advisable to ensure an adequate supply of fertilisers for the use of farmers, you will perhaps allow me to make one or two comments on the statements of your Agricultural Correspondent.

With the opinion that the farming interest has a right to claim that not a ton of fertilisers or

able from time to time. Only when the Board have been satisfied, not only by the returns of stocks in hand, but also by prospects of future supplies, that the requirements of farmers were fully provided for, have they assented to exports.

It would, however, be of interest if your correspondent would indicate more clearly what he means by a full provision for home requirements, particularly in the case of sulphate of ammonia, which he selects as an example. The normal output of sulphate of ammonia is about 400,000 tons per annum, and the normal exports are about three-fourths of the total, a considerable proportion of the remainder being used for industrial purposes. Is it suggested that farmers would use

POUR NOS AMIS FRANÇAIS ET BELGES.

CHRONIQUE SPÉCIALE (LXII).

CHEZ LES PÉPINIÉRISTES ALLEMANDS.

L'EXPLOITATION des pépinières allemandes a visiblement souffert de l'état de guerre. Des correspondants envoient à la presse professionnelle des renseignements assez intéressants à ce sujet. D'anciens signalent une situation satisfaisante, d'autres donnent une note franchement mauvaise. D'une façon générale, on se félicite cependant des achats faits par les administrations publiques.

Les ventes d'arbres fruitiers aux particuliers ont été importantes. La production des fruits étant réputée rémunératrice avant la guerre, il se manifesterait une tendance à l'étendre, maintenant que le mot d'ordre en Allemagne est de se passer de l'étranger. On n'excepte pas les expéditeurs de fruits d'Amérique auxquels on désire garder rancune des fournitures de matériel faites par leurs compatriotes aux pays alliés.

Les essences pour plantations d'avenues ont été peu demandées, et encore a-t-il fallu faire des concessions importantes aux amateurs. De même les Conifères furent difficiles à placer et on regrette que les administrations publiques y recourent si peu pour les plantations dans les villes. Les achats de Roses furent également sans grande importance.

Dès le début de la campagne les pépiniéristes s'étaient rendu compte que si on voulait vendre quoi que ce fût, il fallait réduire les prix au minimum, car ce n'est que l'occasion qui, dans les circonstances régnant actuellement, amène le client à faire des achats. Il lui faut des "prix de guerre."

On estime que les transactions ont atteint la moitié d'une année normale. Aussi les stocks de plantes en pépinière se sont visiblement étendus et on s'efforce de réduire l'importance des semis et des bouturages pour ne pas avilir davantage les cours.

En ce qui concerne le travail dans les pépinières, le manque de bras a entraîné des difficultés sérieuses, notamment pour les expéditions, et on regrette que la clientèle reste si exigeante, malgré les circonstances atténuantes que peuvent faire valoir les fournisseurs.

Au cours de l'automne, la situation s'est d'ailleurs empirée, par suite du rappel de nouvelles classes de Landsturm. La demande d'arbres de la part de particuliers a par le fait même encore été réduite.

Certains pépiniéristes se plaignent vivement des dégâts commis dans leurs plantations par les lapins sauvages. Ils demandent que la destruction en soit conduite systématiquement. Outre la suppression des dégâts, ils font valoir qu'il y a là une source sérieuse d'aliments pour le peuple, les peaux sont très précieuses et même le poil peut être avantageusement utilisé dans les étoffes à base de laine.

FORCAGE DES MUGUETS.

Au moment où les efforts se multiplient pour arracher à l'Allemagne le monopole pour la fourniture des griffes de muguet, il n'est pas sans intérêt de publier les résultats d'essais de forçage faits l'année dernière dans la région de Hambourg. Ces essais avaient pour but de contrôler l'efficacité des bains d'eau chaude et d'établir la température et la durée d'immersion les plus favorables.

Les conclusions auxquelles on est arrivé sont résumées comme suit :—

1. Les avantages du traitement à l'eau chaude sont incontestablement établis.
2. La température de l'eau et la durée d'im-

mersion dépendent de l'époque du forçage. Pour un forçage très précoce, il faut une température de 35 à 38° et une durée de 10 heures, ou 40° et 5 heures; plus tard la température du bain ne doit pas dépasser 32 à 35° et une durée de 5 heures est suffisante.

3. Après la mi-février le traitement est superflu et peut même exercer une action nuisible.

4. Des règles précises ne peuvent pas être appliquées à tous les cas invariablement, mais d'une façon générale, il y a lieu de remarquer :

Après un été froid et humide, l'immersion ne peut pas durer aussi longtemps qu'après un été chaud et sec.

Des griffes produites en terre forte sont mieux influencées par le traitement que celles de terre légère.

Des griffes de grandes dimensions subissent un effet plus favorable que celles de qualité inférieure.

Dans tous les cas il est indispensable de contrôler la température du bain et de la maintenir rigoureusement constante.

NOUVELLES DIVERSES.

COMMERCE HORTICOLE AVEC LA NOUVELLE ZÉLANDE.—L'importation de fruits et de plantes en Nouvelle Zélande ne peut se faire que par certains ports. Les envois doivent être accompagnés d'un certificat du modèle requis et être admis par l'inspecteur compétent du port d'arrivée.

LA CRISE DES POMMES DE TERRE. À Paris, la difficulté des transports maintient toujours des cours élevés pour les Pommes de terre. La nouvelle récolte d'Espagne et d'Algérie est déjà représentée par quelques envois, mais leur importance n'influe pas sur le prix du produit de consommation ordinaire. On cote : Hollande ovale, 200 à 220; Hollande ordinaire, 190 à 200; Saucisse rouge du Gâtinais, 170 à 180; Saucisse grise, 170 à 175; Early Rose, 150 à 140; ronde jaune, 115 à 130; Industrie, 120 à 130; le tout aux mille kilos, sur wagons de 10 tonnes, gares départ.

En Angleterre les marchés restent soutenus. Chose singulière, la Pomme de terre destinée à l'alimentation se vend aussi cher que le tubercule de semence. Les derniers cours étaient comme suit : Oxfordshires, Lincolns, Kents et Bedfords, 90 à 95 shellings la tonne; Cambridgeshires, 90 shellings; Essex, 75 à 80 shellings. Bien qu'il y ait également les railways soient congestionnés, la situation semble plutôt facile. Les Pommes de terre de semence maintiennent leur prix de 70 à 100 shellings, suivant les variétés.

L'Allemagne dont les grandes étendues de terres sablonneuses produisent normalement des quantités énormes de Pommes de terre, a encore étendu ses plantations en 1915. La récolte est estimée à 54 millions de tonnes contre une moyenne de 45 millions les autres années.

En Belgique on prend toujours des mesures pour assurer l'approvisionnement. On assure que des courtiers ont dans beaucoup de cas acheté la récolte chez les cultivateurs en les menaçant de dénonciation. Ce sont eux qui refusent de se soumettre aux prix maxima et créent les difficultés auxquelles les administrations communales s'efforcent de mettre fin.

LES FLEURS DU MIDI.—On remarque que les fleurs du Littoral de la Méditerranée mises en vente à Londres sont, cette année, de qualité supérieure, pour autant qu'elles arrivent en bonne condition. Avant la guerre, le produit de choix semblait prendre la voie d'autres marchés actuellement fermés à l'importation française, et

Londres recevait beaucoup de fleurs de valeur moindre. Le relèvement des tarifs de transport aidant, l'expéditeur français est amené à fournir à Londres une qualité meilleure.

TAXE SUR LA TERRE EN BELGIQUE.—Les Conseils provinciaux belges ont eu récemment à approuver la taxe de 480 millions imposée par les Allemands. D'autres charges extraordinaires incombent à ces administrations et l'on propose de lever des contributions nouvelles. Dans différents conseils, il est question d'imposer les terres cultivées, à raison de 20 francs par hectare.

L'HORTICULTURE HOLLANDAISE ET LA GUERRE.—La situation chez les producteurs néerlandais qui, après les inquiétudes du printemps de 1915, s'était sensiblement améliorée dès le milieu de l'année, a donné pleine satisfaction pendant l'été et l'automne. On commence à publier les chiffres d'affaires de certaines coopératives horticoles qui dénotent une prospérité sans précédent. A Poeldyk, la branche locale de la Fédération "Westland" a vendu pour 726,262 florins, soit une augmentation d'environ 200,000 florins sur le chiffre de l'année précédente. L'importance du marché a été telle que certains jours on y a vu une rame entière de wagons de Melons seulement.

A Westerlee, un autre marché local, la réserve réglementaire est de 1,000 florins par an; cette année la situation financière est tellement favorable qu'on a décidé d'y ajouter 8,000 florins.

Les ventes dans les Coopératives néerlandaises se font au rabais, parce que le fisc impose les enchères. Un projet de loi va voir le jour, tendant à frapper les ventes au rabais d'une taxe de ½ pour cent. Cette nouvelle a créé une vive émotion dans les milieux horticoles, car la taxe frappera surtout les maraîchers dont les organisations pour l'écoulement de leurs produits ont pris une extension considérable. L'opposition est basée sur le fait que c'est le producteur lui-même qui vend, la coopérative n'étant pas même son agent comme c'est le cas pour les commissionnaires. Il est cependant très probable que le projet prendra bientôt forme de loi car on insiste sur la nécessité de créer des ressources nouvelles pour l'état.

KORT OVERZICHT VOOR DE VLAMINGEN.

De Duitsche boomkweekerij lijdt nog al van den oorlog. Fruitplantages worden in tamelijke uitgestrektheden aangelegd daar men na den oorlog wenscht onafhankelijk te zijn van vreemde landen.

De openbare besturen zijn ook voortgegaan met sierplantingen aan te leggen, doch bijzonderen hebben in dien zin niets gedaan. Gebrek aan werkvolk veroorzaakte moeite met de verzendingen.

Proeven onlangs genomen met warmwaterbaden voor Meibloemen, geven afdoende bewijzen van den invloed der bewerking, als men maar eenige regels naleeft.

Er is kwestie in België een taks van 20fr. op ieder hectare land te heffen daar zoo veel bestellingen door de Duitschers geeischt worden.

De eerste Kaapvruchten zijn in London aangekomen. Uit hoofde der moeilijkheden om de vereischte ruimte aan boord der schepen te bekomen, verwacht men minder perziken, abrikozen en pruimen dan voorgaande jaren.

De bloemen uit 't Zuiden naar Londen gezonden zijn van betere hoedanigheid omdat de gewone markten nu gesloten zijn.

DEEP CULTIVATION AND FOOD SUPPLY.

(Concluded from p. 18.)

COSTS OF WORKING.

Now I am quite prepared for some severe strictures with regard to the figures of cost. I am very well aware that on some soils the cost of some of the operations referred to is considerably less. As an instance, I believe in some parts of Middlesex double digging of a kind [not an exact replica of the method of double digging carried out in the plots, which I may say was identical with that done in private gardens] is done by the piece at from 1s. to 1s. 3d. per pole. But at this price no shovelling out of crumbs is attempted. This latter may very well add one third to the cost of the work. I am not prepared to say which method is the better. One obviously entails less expense. Apart from this, any practical man knows that different kinds of work carried out on plots of but 4 poles in area cost relatively more than when similar work is carried out on larger areas. Nevertheless, the fact remains that even after having once been moved, I have failed to induce any workman who has had some experience of the soil to undertake to ridge and double dig for less than 2s. per pole. If any one of your readers imagines a little fortune is to be earned at this price, and is anxious to attempt the feat, I will willingly give him an opportunity for a practical demonstration. I have an acre held back for that purpose. However, the figures as they stand should give a comparison of the difference in the cost of the various methods. Then how do the yields of the different plots compare with one another? A comparison of the crops is given below:—

	Plot	1	2	3	4	5	6	7
Cost of initial working per pole	...	6d.	2s. 6d.	2s. 6d.	6s.	6s.	6s. 6d.	6s. 6d.
Total	...	2s.	10s.	10s.	£1 4s.	£1 4s.	£1 6s.	£1 6s.
Potatoes, weight in lbs.	...	355	369	377	401	424	309	348
Cabbages, weight in lbs.	...	398	455	536	449	420	356	366
Celery, in lbs.	...	511	510	523	511	522	465	493
Onions, in lbs.	...	419	384	370	336	356	223	172
Onions, in lbs.	...	769	778	865	748	719	750	765
Cabbage, in lbs.	...	1,144	1,062	993	846	763	711	647

A few observations respecting the plots during the time they were under crops, as well as the crops themselves, may be of interest.

It was noticeable during the first two or three years that the tilth on plot No. 1 was superior to the others. The fact of the plough pan having been brought to the surface on plots 2, 3, 4, 6, in order to work the soil the depth of the tines of the fork at the first spit removed, would naturally bring about deterioration in the tilth on these particular plots. This deterioration accounts for the remarkable records of the first crop of Onions, where plot No. 1 yields the greatest weight.

Similar effects were noticed in the early stages of growth of the Potatoes, the sets on plot No. 1 coming through first, and looking the strongest for a few weeks, but the effect was only temporary: the great drought of 1911 began to affect the Potatoes on plots Nos. 1, 6 and 7 first. All looked very promising until mid-July, when all began to show the effects of combined heat and drought. Sub-tuberation commenced in August, and the crop proved disappointing. There was an abundance of tubers, and with more favourable weather the crop should have proved a heavy one.

With the Cabbage it was noticeable that most growth was made in early autumn and winter on plot No. 1, but in spring the deeper cultivation began to tell. Plots 3 and 5 gave the greatest number of early hearts, when 1s. 6d. per dozen was the market price. It would seem that the fact of the manure being nearer the surface had some effect on earliness.

As would be expected, the Celery was far and away the most uniform crop, and, from a grower's point of view, there was nothing to choose between the heads. The price realised all

the way through was practically 1s. 6d. per dozen. The season of 1912 was favourable to this crop. Earthing up on plots 6 and 7 was a very difficult and expensive job, and the Celery required a great deal of washing.

The Onion crop in 1913 was disappointing. Owing to the wet weather which prevailed at the time of planting, the tilth was destroyed, and drought setting in directly after, no great amount of tilth could be created. In 1914 the Onion crop was much more satisfactory. The Cabbage crop in 1915 was better than in 1912. Plots 1, 2, 3, 4 gave the greatest number of early heads, which means a considerable gain in price. While cutting had practically ceased on those plots by June 15, a large proportion of the heads on plots 6 and 7 were not ready until July and August, and had we decided to crop again with Celery a large proportion would have had to have been sold as greens. The entire crop was later in maturing than in 1912, owing to the difference in the season.

The plots, with one exception, have since been double dug, ridged, and manured for the purpose of cropping them with either Potatoes or Onions in 1916. The exception referred to is plot No. 6, which I propose to re-trench and revert the soil to its natural order of position. Participation in the work reveals the fact that there is little difference in the working of plots 2, 3, 4 and 5, and though there is a decided improvement since the experiment was first started in 1911, a very great deal yet will require to be done before the physical condition approaches anything like the ideal. Neither of these plots is as wet in winter as formerly, but if a preference is given, it would lie with plots 3 and 5. On these the humus is more in evidence near the surface, and

the friction on the tools seems less. On all four the sub-soil is more mellow and moves with less difficulty.

Plots 6 and 7 show little improvement on their condition in 1911, and from that date there has been very little, if any, tilth worthy of the name.

The deductions to be made from this experiment on this particular type of soil appear to me to be that:—

1. Economical cultivation will not permit of methods that make up for the temporary destruction of, or bring about serious deterioration in, the tilth.

2. No immediate return can be expected from money spent in extra deep cultivation.

If the experiment teaches anything it is the gospel of Jethro Tull. Tilth 1st, tilth 2nd, tilth 3rd.

In conclusion, I suggest that if radical improvement in the physical condition of heavy land is desirable, and could be made a national matter, like the reclamation of the Zuyder Zee, it would probably be most expeditious to adopt a modification of the Weedon-Lois system of cultivation. Thus alternate plots would be in turn stripped of top soil, the soil accumulated and cropped on the adjoining plot, the sub-soil then broken up, fallowed, and worked during the ensuing summer. It would be again covered, when its condition had been sufficiently improved, with the soil which had been removed from it, together with that of its fallow alongside, this plot to be treated similarly. Even then, a wet August might upset the scheme!

Whether our food supply will eventually necessitate such measures is for economists to determine. The horticulturist has been gradually squeezing the agriculturist out in some dis-

tricts. Is he to be squeezed back again as the demand for wheat, beef, and mutton grows, and will he have to double or treble his output?

I hope it will not be assumed that I am in any degree opposed to methods of deep cultivation, which ultimately increase the productiveness of the land, and the quality and market value of the crops. Those who know something of my work are aware that on occasions I have been guilty of practices that would satisfy the most rabid of spadesmen in his wildest mood. Such methods were deliberate, and carried out with the conviction that my end could be attained in no other way, though I never concealed from myself the unsoundness of it from an economic standpoint. Had the conditions been against me I should have been compelled to adopt more tentative measures. Those I made use of were only justified by the fact that they were both temporary and successful, and in my case necessary; at least, I believed them to be so, though I am afraid even now a good deal of capital sunk in the operations would have to be written down in order to show some interest.

The creation of a similar amount of soil to that which Nature has formed in some of our valleys during centuries, and which embodies the decay of endless generations of plants, can scarcely be effected with poor moorland on a steep hillside by the efforts of man spread over a few years, without great expense.

Nevertheless, I strongly contend that under normal conditions, the discussion and recommendation of methods of cultivation should be treated in a business-like manner, and the question of cost and of the relative yield of crops kept in the foreground. *F. G. Drew, University College, Reading.*

NURSERY NOTES.

H. CANNELL AND SONS, EYNSFORD.

For many years the firm of H. Cannell and Sons was located at Swanley, and "Cannells, of Swanley," became a household name in British gardens. Later the needs of the business required more land, and ground was acquired in the pleasant and fertile valley close to Eynsford Railway Station. Offices and glasshouses were built, and, as a residence was included, the headquarters of the business were also transferred to Eynsford.

On the retirement of the late Mr. Henry Cannell a few years ago, the business and name were acquired by a company, with Mr. James Lawson as manager. In the short time Mr. Lawson has controlled affairs there has been a great development in the fruit and Rose departments. When I visited Eynsford on the eve of the great British-grown Fruit Show, the harvest of the Apples and Pears had just commenced. The superb quality of the fruits was seen at Vincent Square, where the firm's exhibit was awarded a gold medal. Long rows of trees of Cox's Orange Pippin, James Grieve, Charles Ross, Worcester Pearmain and Lady Sudeley Apples, to mention a few, were weighed down with rosy-checked fruits, nearly all of exhibition quality, and the same was true of such cooking varieties as Lane's Prince Albert, Lord Derby, Newton Wonder, Peasgood's Nonesuch and Warner's King.

The handsome fruits of Gascoyne's Scarlet, which variety Mr. Lawson recommends should be lightly pruned, and various other sorts, were covered with a most attractive bloom. I have specially mentioned the Apples at Eynsford, because they were so abundant and so overwhelmingly attractive, but other fruits are grown equally well, including Pears, Peaches, Plums, Cherries and bush fruits.

The soil of the lower slopes of the nursery is particularly suitable for Roses, and Mr. Lawson grows upwards of 500 varieties. In a sense too

many, but we aim at supplying any variety that is asked for," remarked Mr. Lawson, when I suggested that it seemed an unduly large number. On the opposite slope to these orderly rows of Roses there is a complete collection of hardy herbaceous and Alpine plants, whilst higher up are flowering shrubs and Conifers in great variety.

That the firm of Cannell still make a speciality of Zonal Pelargoniums is well known to the frequenters of the R.H.S. fortnightly meetings, where, even in mid-winter, splendid tin-ses of the best varieties are shown regularly. The long ranges of glasshouses contain select collections of many other greenhouse plants—*A. C. B.*

French Mangetouts. See also an article in *Le Petit Jardin*, May 9, 1914, page 221. *W. L. L.*

LIME-WASH FOR FRUIT TREES (see p. 15).—*Southern Grower* proposes to use cement for mixing with lime-wash for spraying, to make the lime stick to the trees. I would suggest trying the refuse from acetylene-gas tanks, as this material sticks well to the trees. Some use acetylene-gas refuse alone for spraying, but I find it is not sufficient by itself for the destruction of insect life. This refuse is also useful as a shading for glasshouses, but it should be applied in a thin state mixed with water, otherwise there would be a difficulty in removing it from the glass in the autumn. *D. D. R. Ashridge.*

success. Three factors come in here: (1) The relatively large amount of granular material that has to be loaded needs, I fancy, a larger amount of size than was used; (2) the opaque lime tends to shelter the light from the chromated gelatine, and hence retards its being made insoluble, especially at this time of the year, when the light is not very active and is short in duration; (3) admittedly speculatively, perhaps owing to the excess of alkali, the chromate formed at the expense of the dichromate has less power in forming the insoluble compound. But the rock-bottom question is, Are we not hitting the wrong end of the stick? It is the general experience that the first lime washing adheres pretty well, but that subsequent washings are rapidly removed by weather. To account for this, my idea is that on the natural bark surface there are gums, resins, fats, or what not, which form fixative agents with the caustic lime, hence its adherence; with the first application these are destroyed, and future washings have nothing to fix them. If this be true, what is wanted is a preliminary coating of some starchy, gummy, or gelatinous substance *before* the lime is applied. Again, if this be true, and *Southern Grower's* ingenuity can evolve the right preliminary application, the difficulty will be solved (pace the expense of double spraying). *H. E. Durham.*

— If *Southern Grower* will use Baxton lime, which is of a particularly hard nature, he will find that it does not readily wash off, even though the weather be dull and a trifle showery. If the lime is used hot it adheres all the better to the bark. Some persons hesitate to spray Plum trees with lime when the flower buds are unfolding, or even when they are about to "crack" previous to bursting into blossom. They need have no fear, even if the blossoms are fully developed, for there will be not the slightest harm done even if the fully expanded blossoms are thoroughly wetted by the lime-wash. *M.*

— Has *Southern Grower* tried the effect of the addition of a small quantity of milk or of borax on the adhesiveness of his spray fluids? When marking a tennis court it is usual for the knowing to mix the whitening with water and a few drops of milk, and in my experience lines so made withstand rain longer than those made from whitening alone. Whit-washers use a trace of borax when making up lime washes, and claim that the adhesiveness is increased. Good workmen are careful, moreover, to slake lime properly by adding just enough water to cover the lime. The mixture is left overnight, and in the morning more water is added. The rationale of the process is evidently the securing of the finest possible disintegration of the solid; for the finer the particles the better they stick. *M. N.*

MARKET FRUIT GARDEN.—*Southern Grower*, in his interesting fruit notes on p. 15, alludes to the possible plan of trying Lucerne among his Apple trees. After growing Lucerne for many years as a field crop, I would point out to him that if he does not cut it over at least four times in a year, I think he will find that the crop will be so heavy that when lying on the ground the secondary growth will be much injured, to the extent of serious harm to the plant for future progress. In ordinary field cultivation in this part three crops of Lucerne are obtained in a season, the first growing from 2 feet to 3 feet high. In *Southern Grower's* soil growth would doubtless be freer still. With respect to the practice of spurring Plum trees with a view to obtaining regular and full crops, there should be no doubt as to the value of spurring in the mind of anyone who will examine wall trees that have grown for, say, forty years. Such trees, and even those half as old, cannot bear full crops otherwise than on spurs. With summer pruning regularly attended to, it does not take long to obtain branches closely furnished with spurs, and when once this is assured the fruit follows as a matter of course. *E. M., South Hants.*

APHIDES AND THEIR EGGS (see p. 26).—Allow me to thank Mr. J. G. Blakey for his interesting contribution to this subject. As to rainfall, temperature, and elevation my average annual rainfall for the fifteen years of my residence in my present place is 29.59 inches. The



FIG. 17.—*LAELIA FLAVIONA*: SEPALA CREAM COLOUR, VEINED WITH ROSE-PURPLE.
(See Awards by the Orchid Committee, p. 40).

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

R.H.S. FRENCH BEAN TRIALS, 1914.
In reply to Dr. Durham, page 386, Vol. LVIII, I consider that the stringless Beans are the Mangetouts. Mangetouts or stringless Beans are those that can be eaten when only the tip of the pod and the stalk are removed, and that break readily. I take it that mangetout and sans parchemin mean the same thing, because if they have either strings ("fil") or membrane ("parchemin"), they cannot be Mangetouts. Of course, one knows that they cannot be eaten when too old. I think that all the stringless English varieties are of a different colour from the non-stringless when cooked, and this is true of the

— *A. Southern Grower's* experiments with lime washing are of interest. I suppose that he has tried teaspoonful trials of different proportions of cement and lime to estimate the setting power. A year or two back I came across the statement that, for outdoor lime-washing, *bas lime* should be used, as having greater adherent properties, and I endeavoured to persuade a local grower to try it on his trees, but I fancy that it was not tried; the rationale would appear to be like that of mixing in cement. I hardly think that size will be a profitable addition in the light of trials made so far; in order to make size more valuable as a fixing agent, at my suggestion, the effect of a small addition of bichromate was tried at Long Ashton (*vide Report*), but it was not a very marked

temperature is mild, as I am only five to six miles from the south coast as the crow flies. The elevation is from 100 feet to a little above sea-level. When I have found aphid eggs on Apple trees (which has been rarely) they have been thickly spread on wood of the past season's growth and not in the axils of side-shoots or spurs, where Mr. Blakey has found them. This winter a single infested shoot has just been found by one of my two assistant pruners when nearly finishing an orchard of six acres. His colleague has not found any eggs, nor have I found one in another orchard. Both orchards were very badly infested with aphides in the summer. I have looked in vain in the axils of twigs and spurs, finding no eggs of the aphid, but very many of the Apple sucker. In some seasons I have examined the hedges around orchards without finding any aphid eggs; but I never examined Blackberry bushes, on which Mr. Blakey has found eggs. This omission shall be rectified. It is clear that the woolly aphid is not killed by frost, as the insect lives through the winter; it is always more or less protected by its wool. I feel confident that the common aphides of the Apple, apart from the woolly aphid, cannot withstand any considerable frost, as I have found late ones dead on the trees after a few degrees of frost in the autumn, and early ones in the spring. *A Southern Grower.*

IRIS STYLOSA (see pp. 4, 26).—I have followed with keen interest the remarks of Messrs. Rowles and Edwards on *Iris stylosa*, for we have here a long border of these exquisitely beautiful flowers growing under a south wall. I agree with Mr. Edwards as to dividing the plants, and this should be done every three years at least. This *Iris* does not require rich soil, a sandy loam is more suitable; and in sandy soil the quality of the blooms is much superior. Whether divided or not, copious waterings are always required in summer by plants growing at the foot of a south wall. Our plants are a mass of blue flowers, and I prefer the blue type to the white. *J. I. Paice, Aldenham Vicarage Gardens, Watford.*

POTTING BEDDING PLANTS.—Your correspondent Mr. W. F. Rowles must have particularly good accommodation for his Zonal and Ivy-leaved Pelargoniums. On p. 19 he recommends that those which were rooted in boxes in the autumn should now (the second week in January) be potted singly. As the most severe weather of the winter may reasonably be anticipated during the present month, I think that the majority of gardeners would prefer to wait until the middle of February, when the roots will be far more active than they are now, before carrying out this operation. I have nothing to say against thoroughly drying the pots that are to be used, and rubbing them out instead of washing them, but it seems strange that after being told to practise small economies like this we are advised later on to shift the bedding plants into pots 5 inches in diameter. Of course, a well-grown plant in a 5-inch pot will cover more space than a smaller one, but the work of repotting has to be considered, and that, too, at a particularly busy time. The space required, expense of soil, etc., has also to be taken into consideration. If the potting is done in the middle or latter part of February and the plants put into 4-inch pots, there will be no need for the additional work and expense of a second potting. *T.*

THE RULES OF BOTANICAL NOMENCLATURE (see pp. 3, 26).—The whole question of botanical nomenclature is in such a confused state that one is inclined to ask what are the strict rules bearing on it, referred to by Mr. W. R. Dykes on p. 26. I take it that he adheres markedly to the rules of priority, yet the same writer a few weeks since in a contemporary journal upheld the wholesale changing of the names of Ferns, according to which the Bracken is to be no longer a *Pteris*, nor the Hart's Tongue a *Scelopendrium*. Reference is made to the divorce between botany and horticulture, but it is not that alone which causes the confusion, as even authoritative botanists differ widely from each other. Mr. Elwes stated that once a plant has been cultivated for a long period under a name which has become generally known, it is

almost impossible to get a new name into general use. Many writers in the horticultural Press, and particularly those in botanic gardens, give only the latest name, whereas by a synonym it may be known throughout the length and breadth of the land. For example, in horticultural journals recently *Aesculus parviflora* is referred to without any mention of the fact that it is far more frequently known as *Pavia macrostachya*; in the case of *Tibouchina semi-decandra* the older name of *Pleroma macranthum* is ignored, whilst few gardeners would recognise the popular *Poinsettia pulcherrima* under the name of *Euphorbia pulcherrima*. All readers of *The Gardeners' Chronicle* are not botanists, hence it would often save confusion if, besides the correct name, the well-known synonyms were given. *W. T.*

YEW POISONING (see pp. 365, 369, 385, Vol. LVIII.).—About ten years ago I was present at an inquest held at Northampton, with reference to the death of a man who, while an inmate of a private asylum there, poisoned himself by swallowing Yew leaves. He was being exercised in the grounds, and when his keeper's back was turned picked some leaves from a Yew tree growing near, and swallowed them before his keeper could interfere. In about an hour he was in a state of collapse, and although every effort was made to counteract the effects of the poison he died shortly afterwards. It was known that the man had suicidal tendencies. It did not transpire at the enquiry whether the leaves eaten were those of the Irish Yew or the common form, but it was stated in evidence that only a few leaves were eaten. *J. Bruce Jackson.*

DAHLIA IMPERIALIS (see p. 16).—The illustrations of *Dahlia imperialis*, and the accompanying article, in the issue for January 3, are interesting. It is to be regretted that this handsome species cannot be flowered out-of-doors in this country. We have tried several times to flower it in the open by growing on large plants, and planting them out-of-doors in June in sheltered positions, but without success. Thus treated, however, they make splendid specimens by September, and by carefully lifting, tubbing, and transferring them to a greenhouse, they flower well in November and December. For this purpose Mr. S. Mottet's plan of plunging the receptacles is to be preferred to planting direct in the ground. The plants and flowers are striking objects for lofty greenhouses, especially when arranged among graceful Palms, but their great height—10 to 15 feet—makes them unsuitable for low houses. Few subjects are more effective as cut blooms than *Dahlia imperialis*, especially when the vases are placed high enough for the pendant blooms to be seen to their full advantage. The *Dahlia Annual* for 1915 contains an illustration of this species, reproduced from a photograph of plants which bloomed here in 1914. *A. J. Cobb, Duffryn Gardens, near Cardiff.*

SOCIETIES

ROYAL HORTICULTURAL.

JANUARY 12. The first meeting of the new year was held on Tuesday last in the Vincent Square Hall, Westminster, and was well attended. The exhibition was a small one, as is usual in the case of January meetings. The most important groups were those of Orchids, the collection shown by Messrs. CHARLESWORTH AND CO., Haywards Heath, being awarded a Gold Medal.

The Orchid Committee recommended one First-class Certificate and four Awards of Merit to novelties.

The Floral Committee recommended the awards of one First-class Certificate, and two Awards of Merit to plant novelties, and nine Medals for collections.

The Fruit and Vegetable Committee made no award.

Floral Committee.

Present: Mr. H. B. May (in the chair), Messrs. W. Cuthbertson, W. P. Thomson, John Dickson, W. Howe, W. Bain, J. W. Moorman, C. R. Fielder, C. T. Druery, G. Reuthe, John

Green, W. B. Cranfield, W. J. Bean, Geo. Harrow, T. W. Barr, Col. M. Lockwood, Jas. Hudson, J. F. McLeod, Thos. Stevenson, John Jennings, C. E. Shea, H. J. Jones, C. E. Pearson, A. Turner, W. G. Baker, C. Dixon, Geo. Paul, J. T. Bennett-Poë, E. A. Bowles, R. C. Notcutt, and E. H. Jenkins.

AWARDS.

FIRST CLASS CERTIFICATE.

Abies bracteata (see fig. 13).—This Conifer is one of the most beautiful of all the Silver Firs. It is a native of California, and was introduced into this country in 1853 by William Lobb. The award was made for the ornamental nature of the cones, which have long bracts, with globules of thin transparent resin on the tips, suggesting bear-frost. The small branch shown had as many as 15 cones, and was cut from a tree measuring 60 feet 8 inches in height, with a spread of branches 35 feet 6 inches. Shown by Lieut.-Col. BARCLAY, Bury Hill, Dorking, near Graysmark.

AWARDS OF MERIT.

Begonia Norbury White.—A sport from *His Majesty*, the blooms being white tinged with pink at the edges and about one inch across. The plants were fine, compact specimens, and very floriferous. Shown by Mr. George KENT, Norbury Park Gardens, Dorking.

Cotoneaster horizontalis purpusilla. This is a small-leaved form of the well-known *C. horizontalis*, and a native of Western Hupeh, where it is abundant in open, rocky ground. The plant bears a superficial resemblance to *C. microphylla*, with which it has been confused. The specimen was shown in a tub, the low, scrubby growth being well furnished with dull red berries, about the size of haws. Shown by Hon. VICARY GIBBS (gr. Mr. E. Beckett).

OTHER NOVELTIES.

The Hon. VICARY GIBBS (gr. Mr. E. Beckett) showed the new *Cotoneaster Harroviana*, with berries in corymbs like *C. frigida*, but smaller and lighter in colour. The branches are arching and bear dark-green leaves, which persist; he also showed a tree of *C. amoena*, with clusters of coral-red berries.

MESSRS. FLEPHER BROS., Ottershaw Nursery, Chertsey, exhibited tiny fruiting plants in pots of *Aucuba japonica fructa alba*, the berries being pale yellow, and a form of *longifolia* variety with clusters of scarlet berries on upright shoots above the foliage.

MESSRS. H. J. CHAPMAN, LTD., Rye, showed *Narcissus Réveillé*, raised from *N. principis* × *N. pallida*. The variety thus belongs to the trumpet section, and is one of the earliest to flower, which the name subtly conveys. The trumpet is deep sulphur-yellow, fading to almost cream at the base, and the perianth creamy-lemon colour. The plants, which are about 1 foot in stature, had only received the protection of a cold frame.

GROUPS.

The following Medals were awarded for collections:—

Silver-gilt Flora Medal to Messrs. SUTTON AND SONS, Reading, for Cyclamen. This was the finest floral exhibit and occupied the whole of one side of a long table, the plants being arranged in batches of distinct colours, with a setting of Ferns and small Palms at the back. The more notable varieties were *Butterfly* (white), *Vulcan* (crimson), *Salmon Scarlet*, *Silver-leaf Salmon*, the foliage having a broad band of silver on a dark ground, with lighter veining, and the giant forms of white, crimson and salmon. The centre-piece was a basket of *Vulcan* interspersed with a white variety, and on either side were batches of salmon and pink shades. The new *Giant Rose Queen*, of rosy-pink colouring, was conspicuous in a collection that represented some of the best varieties in cultivation, and the quality of all the plants was remarkable for early January.

Silver Flora Medal to Messrs. H. B. MAY AND SONS, Upper Edmonton, for Ferns, Cyclamens, *Primula obconica* and Palms. The Cyclamens were arranged amongst the Ferns in groups and included excellently-flowered plants in salmon, white, crimson, and other shades seen in this useful winter-flowering plant.

Silver Banksian Medals to Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath, for Perpetual-flowering Carnations. The quality was excellent, and many of the varieties were of the firm's raising, the finest of all being Mary Allwood. Mr. L. R. RUSSELL, Richmond, Surrey, for decorative trees and shrubs in pots. Some, including Daphnes, Jasminum nudiflorum, Garrya elliptica and species of Hamamelis, were in flower, these, with others in berry, giving touches of colouring amongst the various foliage subjects. Messrs. W. WELLS AND CO., LTD., Merstham, for Chrysanthemums and Carnations.

Messrs. J. CHEAL AND SONS, Crawley, for decorative shrubs and trees.

Orchid Committee.

Present: Mr. J. Gurney Fowler, in the chair; Sir Jeremiah Colman, Bart., Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), J. Gurney Wilson, R. A. Rolfe, R. G. Thwaites, F. J. Hambury, Pantia Ralli, A. A. McBean, F. M. Ogilvie, W. Cobb, J. Charlesworth, W. H. Hatcher, H. G. Alexander, C. H. Curtis, J. E. Shill, W. P. Bound, A. Dye, S. W. Flory, W. Bolton and R. Brooman White.

interesting fact that the yellow in the sepals and petals comes from the last-named, although the smallest and least showy of the parents.

AWARDS OF MERIT.

Laelia Flaviana (*lona* × *flava*) (see fig. 17), from E. G. MOCATTA, Esq., Woburn Place, Addlestone (gr. Mr. T. Stevenson). A pretty novelty, with six flowers of medium size and quaint colour on an erect spike. The sepals are cream colour, veined with rose-purple; the petals are similarly coloured, but with more purple tinting; the rather narrow tubular lip is dark



FIG. 18.—*ARIES BRACATA*. COKE PURPLISH BROWN.

(See Awards by the Floral Committee).

The feature of this exhibit was the beautiful pink decorative Chrysanthemum *Bertha Lachaux*; and Mr. J. J. KETTLE, Corfe Mullen, near Wimborne, for Violets in some 30 varieties.

Bronze Banksian Medals to Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, for Perpetual-flowering Carnations. Messrs. BARR AND SONS, King Street, Covent Garden, for early bulbous flowers and vases of the beautiful pale blue Iris *stylosa* (unguicularis); and

AWARDS.

FIRST-CLASS CERTIFICATE.

Laelio-Cattleya Antinous (*L.-C. Myra* × *C. Enia*), from Messrs. CHARLESWORTH AND CO., Haywards Heath. A showy novelty, with flowers of good size and shape. The sepals and petals are bright Buttercup yellow; the lip is deep claret purple. The species entering into its composition are *Cattleya Mossiae*, *C. Warscewiczii*, *C. Trianae* and *Laelia flava*, and it is an

claret colour. In this hybrid the yellow of *L. flava* scarcely appears, but in future crossing it will doubtless assert itself.

Odontioda Irene var. *Glorita* (*Odm. Uro-Skinnei* × *Oda. Charlesworthii*), from Messrs. FLORY AND BLACK, Orchid Nursery, Slough. A distinct hybrid of rich and uncommon colour. The erect spike bore flatly-arranged flowers with dark chocolate-purple sepals and petals, and large labellum, almost entirely deep rose

coloured, but in which the spotting of *Odm. Cro-Skimmeri* could be plainly detected.

Cattleya chocoensis McBean's variety, from Messrs. J. AND A. McBEAN, Cooksbridge. The best white form of this handsome ally of *C. Trianae*, and of perfect shape. The flower is pure white, with chrome-yellow disc to the well-rounded lip.

Cattleya Percivaliana grandiflora, from Messrs. STUART LOW AND CO., Jarvisbrook, Sussex. The largest form which has yet appeared, and of good shape and colour. The flowers are bright rose, with dark maroon blotch on the lip, which has a broad lilac margin.

PRELIMINARY COMMENDATION.

To *Odontoglossum exultans* *Orchidhouse variety*, from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells. A charming flower, with sulphur-yellow ground, the inner two-thirds of the segments blotched with rich brownish red tinged with claret colour, the front of the lip being white.

GENERAL EXHIBITS.

MESSRS. CHARLESWORTH AND CO., Tunbridge Wells, were awarded a Gold Medal for probably the largest and best group of winter-flowering Orchids ever staged. The centre, which was the weakest part of the group for effect, was composed principally of white Orchids, including white *Odontoglossums*, white *Laelia anceps* and the best white *Calanthe Harrisii*. With them were some rose-pink *Calanthe Veitchii* and others. The depressions on either side were filled with brightly-coloured *Cattleyas* and *Laelio-Cattleyas*, and at the elevated ends were arching sprays of hybrid *Odontoglossums*, red *Odontodas*, and other Orchids. The edging was composed of many specimens of *Masdevallia tovarensis*, the scarlet *Sophranitis*, yellow *Oncidium cheiroporum* and hybrid *Miltonias* in great variety. *Cypripediums* and seedling *Odontoglossums* were also arranged effectively.

J. GURNEY FOWLER, Esq., Brackenhurst, Pembury, was awarded a Silver Flora Medal for a group of choice and remarkably well-grown Orchids, including several which had previously secured First-class Certificates. Among the best noted were the large white *Brasso-Cattleya Cliftonii* albens, some excellent *Odontoglossum crispum*, a pretty lilac form of *Odontioda Joan*, a richly-coloured *O. Madeline*, some pretty *Masdevallias* and a selection of rare *Cypripediums*, in which the original *C. Daisy Barclay*, several plants of the famous *C. Lecanum* J. Gurney Fowler, and the massive *C. Aeson giganteum* appeared to advantage. A fine *Sophranitis* gave a bright touch of salmon-red colour.

MESSRS. SANDER AND SONS, St. Albans, were awarded a Silver Flora Medal for a group in which were some very interesting species and good hybrids. Their new *Cymbidium Albatross* (*Gottolanium* × *grandiflorum*) has large white flowers spotted with purple, and in size and fine form shows the influence of *C. grandiflorum*. Among the *Cattleyas* the new white *Snow Queen* was noted. A selection of *Odontoglossums* included some with finely-marked flowers, and a good specimen of *Miltonia Warszewiczii* with large dark-rose labellums to the flowers.

MESSRS. STUART LOW AND CO., Jarvisbrook, Sussex, were awarded a Silver Flora Medal for an effective group in which were choice *Laelio-Cattleyas*, including their new yellow-petalled *L.-C. Alex*; also good specimens of *Vanda coenobea*, *Odontoglossums* and *Cattleyas*.

MESSRS. J. AND A. McBEAN, Cooksbridge, were awarded a Silver Flora Medal for a group consisting chiefly of their fine hybrid *Cymbidium*s. Several *C. Alexander*, ranging from white to pale rose, as well as *C. Doris*, *C. Schlegelii*, *C. Gottolanium*, *Zygopetalum Mackayi*, *Odontoglossums* and other Orchids were included in the collection.

Mr. HARRY DIXON, Wandsworth Common, was awarded a Silver Banksian Medal for a group of *Odontoglossums*, *Laelio-Cattleyas* and others. *O. George Day* (*crispum* × *Rossii rubescens*) and a form of *L.-C. Rubens* being remarkably good.

Mr. C. F. WATERS, Deanlands Nursery, Balcombe, staged a small group of good *Odontoglossums*, for which a Bronze Banksian Medal was awarded.

glossum crispum, for which a Bronze Banksian Medal was awarded.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Hannington), showed the pretty new hybrid *Sophranitis-Cattleya Carona* (*S.-C. Dorila* × *L.-C. Rubens*), the stout little plant flowering for the first time in two years and ten months from the seed. The well-rounded flower had cream sepals with rose lines and broad, deep-rose coloured petals, the lip being purplish-crimson, with yellow base. Mr. Thwaites also showed *Odontoglossum Edna Rosita* and *O. Humeanum*.

H. J. ELWES, Esq., Cotesborne, Cheltenham (gr. Mr. W. Walters), showed two profusely-flowered specimens of *Coelegyne* (*Pleione*) *humilis*, the one with white and the other with lilac ground colour in the flowers. The specimens were collected by Mr. Elwes in the Sikkim Himalayas, alt. 9,000 feet.

G. HAMILTON SMITH, Esq., Northside, Leigh Woods, Bristol (gr. Mr. Cummings), showed *Cymbidium Cooperi* and another natural hybrid, both imported with *C. insignis*. Also *C. Capella* (*Wiganianum* × *Pauwelsii*).

MESSRS. ARMSTRONG AND BROWN, Tunbridge Wells, showed *Odontoglossum King Albert* (*Armstrongiae* × *crispum Lucianii*), a new hybrid of perfect shape and beautifully marked. Also *O. Peerless magnificum* and *O. Peerless rubrum* (*Ossulstonii* × *eximium*), beautifully-formed varieties of the type previously shown.

Mr. G. W. MILLER, Wisbech, showed a good variety of *Cypripedium Cravenianum*.

MESSRS. FLORY AND BLACK, Orchard Nursery, Slough, showed a new hybrid of *Cypripedium Calypso* var. *Flamingo*, in general appearance near to *C. Madame Jules Hye*, but larger in all its parts, the broad, deep-rose coloured dorsal sepal with white border being a showy feature.

MESSRS. HASSALL AND CO., Southgate, showed a selection of fine *Cypripediums*, including two plants of *C. Minos Youngii*; *L. Hera Enryades* New Hall Hey variety, and *C. Gaston Bultel*.

Fruit and Vegetable Committee.

Present: Mr. Jos. Cheal (in the chair), Messrs. W. Bates, F. Perkins, E. Beckett, A. Grubb, A. R. Allan, Geo. Kelf, H. J. Wright, A. W. Metcalfe, E. A. Bunyard, G. Bullock, J. G. Weston, P. C. M. Veitch, J. James, Owen Thomas, H. S. Rivers and W. Poupert.

Hon. VICTOR GIBBS, Aldenham House, Elstree (gr. Mr. E. Beckett), showed a basket of *Gascogne's* Scarlet Apples, excellent specimens of this highly-coloured variety; the new culinary Apple *Edwin Beckett*, showing that it is a late keeper; and bunches of *Grape Cooper's Black*.

Mr. W. CAMM, Cliveden Gardens, Taplow, showed a new Tomato named *Winter Coral*, which the Committee recommended for trial at the Wisley Gardens.

DEBATING SOCIETIES.

WARGRAVE AND DISTRICT GARDENERS.—The last meeting of the present session took place on the 15th ult., when Mr. E. Feltham, landscape gardener, Twyford, read a paper on "The Outlook for Gardeners." He referred to what he called the haphazard method of training young gardeners which obtained in the past, and spoke of the changes which have taken place in the profession. An animated discussion followed, in which a number of members took part, officers and committee were elected for the present year.

DERBYSHIRE GARDENERS.—At a recent meeting of this association, Mr. Sharnbrook, gardener to the Rev. H. Buckton, Sutton Hall, Derby, delivered an address "On the Cultural Treatment of Hybrid Begonias." Mr. Sharnbrook is a skilful cultivator of these flowers, and a group composed mainly of *Begonias* exhibited by him at the November show filled a space of 250 feet. The annual report and statement of accounts for the year were submitted and considered highly satisfactory. There had been an increase in the membership, while the profits amounted to £13 9s. 6d.; the amount carried forward was £34 2s. The sum of £15 9s. 6d. has been given to the fund of the National Institution for the Blind.

Obituary.

JAMES JEFFREY.—We regret to learn of the death, on the 6th inst., of Mr. James Jeffrey, gardener, St. Mary's Isle, Kirkcudbright. Mr. Jeffrey had been ill for a considerable time.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending January 1.

The Third Unseasonably Warm Week in Succession.—All the days were more or less unseasonably warm, and also, with one exception, the nights—even on that night the exposed thermometer registered only 7° of frost. To show how remarkably warm the weather has recently been, it may be stated that we have to go back three weeks in order to find even as low a night reading as this. Taking another instance, on each of the seven nights ending the 7th inst., the low st. temperature in the thermometer screen was rather higher than would be reasonable in mid-winter in the warmest part of the day. The ground is at the present time 5° warmer at 1 foot deep, and 4° warmer at 2 feet deep, than the average reading at those depths in January. Rain fell on three days, and to the total depth of a quarter of an inch. During the week 1½ gallons of rainwater came through the bare soil percolation gauge, and also through that on which short grass is growing. The sun shone on an average for forty-nine minutes a day, which is only half the mean daily duration for the month. The wind was, as a rule, high, but on no day did the total velocity for any hour exceed twenty-four miles. The mean amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 1 per cent. The *Winter Aconite* first showed an open flower in my garden, in the spot selected for its observation, on January 5, which is fourteen days earlier than its average date in the previous twenty-nine years, and ten days earlier than last year, and, with two exceptions, the earliest date recorded here in the past twenty-nine years.

THE YEAR.

Of Average Temperature, Exceptionally Wet, and yet Very Sunny.—Taken as a whole, this was a year of average temperature. On the hottest day, June 8, the highest reading in the thermometer screen was 85°, and on the coldest night, that of February 24, the exposed thermometer registered 20° of frost. Neither of these extreme readings is in any way exceptional. The total rainfall exceeded the average for the previous fifty-nine years by 4½ inches. The most unseasonably wet months were those of February, July, and December. On the other hand, the only exceptionally dry month was June. Taking the year as a whole, the sun shone on an average for 4½ hours a day, which is half an hour a day longer than is usual. The most unseasonably sunny months were May, June, and September. E. M.

THE WEATHER IN SCOTLAND.

December was a month of gloom, with a high rainfall and little sunshine. There were only ten days entirely free from rain, while the total fall amounted to 6.54 inches. The wettest day was the 5th, which, beginning with snow, turned to rain about 9.30, and ended in all 1.2 inch. Of sunshine we had only 22½ hours for the month, being 10 per cent. of the possible. The 18th was the brightest day with 5 hours; there were 18 sunless days. The mean barometric pressure was 29.552 inches, with the highest reading of 30.456 inches on the 19th, and the lowest of 28.771 inches on the 6th. For the month the mean temperature was 37°, with a mean maximum of 41° and a mean minimum of 33°. On the 30th the highest maximum of 47° was recorded, and on the 4th the lowest minimum of 32°, the highest minimum of 41° was on the 31st, and the lowest minimum of 23° on the 9th. Thus for the month we had a mean range of temperature of 8° and an absolute range of 24°. There were 21 days of ground frost. The prevailing wind, were from the east and the northwest. James Malloch, Director of Studies, St. Andrews University Training College Gardens, Kirkton of Mauns, near Dundee.

GARDENING APPOINTMENTS.

Mr. E. A. Petch, late of Ake Hall, Park Place, Waddesdon, and Warwick Castle Gardens, as Gardener to HEATH HARRISON, Esq., Le Court, Lass, Hampshire. [Thanks for 1s. for R.G.O.F. box.—Eps]

Mr. E. Covey, Gardener to the Viscount Lifford, Court, Grendall, near Farnham, Hampshire.

CATALOGUES RECEIVED.

DOBIE AND CO., Edinburgh.—Seeds and Sweet Peas, STUART LOW AND CO., Bush Hill Park, Middlesex.—Winter-flowering Carnations.

JAMES STREEDWICK AND SONS, Silverhill Park, St. Leonards.—Cactus Dahlias.

W. WEISS AND CO., Mersham, Surrey.—Chrysanthemums.

Seeds

R. H. BATH, LTD., Wisbech. MESSRS. BROWN AND WILSON, 10, Market Place, Manchester.

JAMES CARTER AND CO., Raynes Park, London.

CHRYSS, Aldersham.

COOPER, TAYLOR AND CO., LTD., 90 and 92, Southwark Street, London (wholesale).

W. CUTBUSH AND SON, Highgate.

ALFRED DAWKINS, 408, King's Road, Chelsea.

DICKSONS, Chester.

Foreign.

W. ALFRED BURPEE AND CO., Philadelphia, U.S.A.—Seeds.

MARKETS.

COVENT GARDEN, January 12.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report.—E.N.S.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Azalea, white, per doz. bun.	4 0-5 0	Lily-of-the-Valley, per dozen bunches:	
Camellias, white, per doz. ..	2 0 —	— extra special	24 0-30 0
Carnations, per doz. blooms, best American varieties ..	1 9-2 6	— special ..	18 0-21 0
— smaller, per doz. bunches ..	—	— ordinary ..	—
— Carola (crimson), extra large ..	3 0-3 6	Orchids, per doz.:	
— Malmesbury, per dozen blooms ..	—	— Cattleya ..	12 0-15 0
— pink ..	10 0-15 0	— Cypripedium ..	2 0-3 6
Chrysanthemums, white, per doz. blooms ..	2 0-3 0	— Odontoglossum crispum ..	4 0-5 0
— Red, per doz. bunches ..	15 0-18 0	Pelargonium, per doz. bunches, double scarlet ..	8 0-10 0
— Yellow, per doz. blooms ..	2 6-3 6	Poinsettia, per doz. blooms ..	12 0-15 0
— Pink, per doz. blooms ..	3 0-4 0	Richardsias (Arums), per doz. ..	2 6-3 0
— White, per doz. bunches ..	10 0-15 0	Roses, per dozen blooms:	
— Bronze, per doz. bunches ..	10 0-12 0	— Duchess of Wellington ..	—
— Pink, per doz. bunches ..	10 0-15 0	— Lady Hillingdon ..	—
— Yellow, per doz. bunches ..	10 0-12 0	— Liberty ..	4 0-6 0
Daffodils, per doz. bunches ..	8 0-10 0	— Madame A. Chateaux ..	4 0-6 0
Eucharis, per doz. ..	2 0-2 6	— Melody ..	—
Freesia, white, per doz. bun.	2 6-3 0	— Mrs. Russell ..	—
Gardenias, per box of 15 and 18 blooms ..	7 0-9 0	— My Maryland ..	3 0-3 6
Hyacinth, Roman, per doz. spikes ..	1 6-1 9	— Niphetos ..	—
Lapageria, per doz. blooms ..	—	— Prince de Bulgarie ..	—
Lilac, white, per doz. sprays ..	4 0-5 0	— Richmond ..	4 0-5 0
Lilium longiflorum, per doz. long ..	2 6-3 0	— Sunburst ..	—
— short ..	2 6-3 0	— White Crawford ..	3 0-4 0
— lancifolium album, long ..	2 0-2 6	Snowdrop, per doz. bun. ..	4 0-5 0
— short ..	2 0-3 0	Spiraea, white, per doz. bun. ..	—
— lancifolium rubrum, per doz. long ..	2 0-2 6	Stock, double white, per doz. bunches ..	—
— short ..	1 6 —	Tuberose, per packet, 24 blooms ..	1 6 —
French and Guernsey Flowers.	s.d.s.d.	Tulips, white, per doz. bunches ..	10 0-12 0
Marguerites, yellow, per doz. bunches ..	2 0-2 6	— coloured, per doz. bunches ..	9 0-15 0
Mimosas (Acacia), per pad ..	5 0-6 0	Violets, per doz. ..	2 6-3 6
Narcissus, Grand Primo, per doz. bun. ..	4 6-6 0	— double, Marie Louise, per doz. bun. ..	4 0-6 0
— paper white, per pad ..	5 0-6 0	— Princess of Wales ..	3 0-4 0
— Soleil d'Or (Guernsey), per doz. bun. ..	4 6-6 0	White Heather, per doz. bun. ..	1 0 —
— French, per pad ..	6 0-8 0		

REMARKS: Chrysanthemums are practically finished for the season. Small lots of bunch spray white blooms are soon bought up. Winter (cheer) (pink) is about the last of the coloured varieties. Tulips are getting more

plentiful, with an improvement in quality. This also applies to Single Daffodils, and the first consignment of these blooms from Lincolnshire were offered for sale this morning. Larger consignments of flowers are now coming to hand from Guernsey and Seilly. These chiefly consist of Narcissus Grand Primo, Narcissus Soleil d'Or, Single Daffodils, Freesia, Violets, Anemone fulgens and Richardias (Arums). Snowdrops are being received from Cornwall in excellent condition. Large consignments of French flowers are arriving, about 5,000 packages having been received on Saturday afternoon and Monday morning last. They contained paper-white Narcissus and Mimosa, but all had suffered owing to the long time taken in transit. Hundreds of packages had to be disposed of at a low price, and large quantities were unsaleable.

Fruit: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Apples—		Dates, per doz. boxes ..	6 0 —
— Albemarle, per barrel ..	30 0-35 0	Grape Fruit, per case ..	12 0-18 0
— Californian, per box ..	7 0-8 6	Grapes, English, black, per lb. 0 10-2 6	
— English cooking, per bus. 4 0-7 0		— Camlin Hall, per lb. ..	3 0-5 0
— Nova Scotian, per barrel ..	13 0-17 0	— Muscat, per lb. 4 0-6 0	
— Oregon, ..	8 0-12 0	— Almeria, per bbl. of 60 lbs. 20 0-28 0	
— Wenatchee, per case ..	11 0-13 0	Lemons, per case 12 6-27 6	
Apricots, Cape, ..	3 0-6 0	Lemons, per box 14-1 6	
Bananas, bunch—		Nuts, Brazils, new, per cwt. 65 0-70 0	
— Medium ..	7 6-10 0	— Coconut, per 100 ..	21 0-24 0
— X-medium ..	9 0-12 0	— Messina cocon., per bag ..	40 0-44 0
— Extra ..	11 6-14 0	Oranges, per case 9 0-40 0	
— Double X ..	12 6-16 0	— Californian Seedless, per case ..	18 0-20 0
— Giant ..	15 0-18 0	Peaches, Cape ..	4 0-8 0
— Red, per ton £20 0 —		Pears, per case 13 0-16 0	
Jamaica, per ton ..	£14 0 —	— stewing, per bus. ..	5 0-6 0
Chestnuts—		Plums, Cape ..	4 0-8 0
— Italian, per bag ..	18 0-22 0	Walnuts, French, per bag ..	5 0-11 0
— Spanish, per bag ..	9 0-12 6		
Colnuts, per lb. 0 6 —			
Cranberries, per case ..	11 0-12 0		

Vegetables: Average Wholesale Prices.

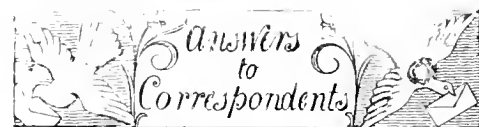
	s.d.s.d.		s.d.s.d.
Artichokes, Globe, per doz. ..	3 0-6 0	Mushrooms, cultivated per lb. 0 10-1 3	
— Jerusalem, per bag ..	4 0 —	— Buttons ..	0 10-1 3
Asparagus, Paris green ..	3 0-3 6	Mustard and Cress, per doz. punnets ..	1 0
Aubergines, per doz. ..	—	Onions, English, per ton ..	14 0-16 0
Beetroot, per bus. 2 0-3 0		— spring, per doz. bun. ..	4 0 —
Beans, Madeira, per bus. 2 0-5 0		— Valencia, per case ..	13 0-14 0
Brussels Sprouts, per bus. 2 0 —		Parsnips, per bus. 2 6 —	
Cabbage, per tally 2 6-4 0		Potatoes, new 0 6 —	
Carrots, per doz. 2 6-3 6		— Algerian, per lb. 0 4-0 5	
Cauliflowers, per tally ..	6 0-8 0	— Channel Islands, per lb. 0 6 —	
Celery, per doz. 4 0-5 0		Radishes, per doz. bun. ..	1 6 —
Celery, per fan 1 0-1 9		Rhubarb, Forced, per doz. ..	1 0-1 4
Chicory, per bus. —		Savoy, per tally 4 0-6 0	
Cucumbers, per doz. ..	8 0-15 0	Seakale, per doz. punnets ..	9 0-12 0
French Beans, per lb. ..	3 0-3 6	Shallots, per sieve ..	2 6-5 0
Garlic, per lb. 0 10-1 0		Sinapach, per bus. 3 6 —	
Greens, per bag ..	1 0 —	Tomatoes ..	
Herbs, per doz. bun. ..	2 0-6 0	— Tenerife, per bundle ..	10 0-18 0
Horseradish, per bundle ..	2 0-2 6	Turnips, per cwt. 4 0 —	
Leeks, per doz. ..	2 0 —	Turnip Tops, per bus. ..	1 0 —
Lettuce, Cabbage and Cos, per doz. ..	1 0-6 0	Watercress, per doz. ..	0 6 —

REMARKS.—The following varieties of English Apples are obtainable: Newton Wonder, Blenheim Pippin, Duntelov's Seedling, and Bramley's Seedling. Barreled fruit from Nova Scotia has not been so plentiful this week. The chief varieties of Pears (Californian) are Winter Nells and Easter Beurre. Early varieties will soon be arriving from the Cape. The last consignment from the latter country included Apricots, Peaches and Plums. The supplies of Grapes (Gros Colmar and Black Alicante) are about equal to the demand. Muscat of Alexandria is almost over, but a few good bunches are still obtainable. Chestnuts have been scarce. Forced Rhubarb is becoming plentiful. English Onions are expected to rise in price. The supplies of Seakale are increasing daily. Tenerife Tomatoes are good and plentiful. Supplies of English and French Asparagus continue fair. Home-grown dwarf Beans are scarce, with the result that those from Madeira have been in demand. Ordinary vegetables and roots are plentiful. Business in all departments is slow. E. H. R., Covent Garden Market, January 12, 1916.

Potatoes.

	s.d.s.d.		s.d.s.d.
Bedford—		Lincoln—	
King Edward ..	4 6-5 0	Eclipse ..	4 6-4 9
Blackland ..	4 0-4 3	Evergood ..	4 0-4 6
Dunbar ..	6 6-7 0	King Edward ..	4 9-5 6
Kent ..	—	Queen ..	4 6-5 3
— Eclipse ..	4 6-5 0	— Scotch—	
King Edward ..	5 0-5 3	King Edward ..	4 9-5 3
Queen ..	4 9-5 3		

REMARKS: Trade is very quiet, and the demand for best quality tubers is good. Second-rate quality Potatoes are hard to sell, and prices are low for these. Edward J. Neighbour, January 12, 1916.



ACETYLENE GAS REFUSE: E. F. Spent carbide of calcium from the generator of an acetylene lamp or gas plant has a manurial value. It is, however, too powerful to apply immediately it is taken from the generator. It should be placed first in some vacant corner of the garden, and left until nearly dry; it can then be applied with advantage to vacant land in the autumn or spring, and dug into the ground. No planting should be done until at least two months after the application of the refuse.

COMMERCIAL TOMATO AND CUCUMBER HOUSES: W. H. B. H. Tomatoes and Cucumbers grown under skilful management for the market yield satisfactory results, and the crops are easy of cultivation. Your best plan would be to write to some of the horticultural builders whose names will be found in our advertisement columns, and ask for estimates and plans of glasshouses. You would require houses, say, from 100 to 200 feet long and 15 feet wide inside the side walls, with brick walls about 2½ feet high from the ground line; the houses to be built on piers. Four 4 inch hot-water pipes should be provided for each house, two each side, close up to the walls, or piers, one above the other; 8½ or 9 feet rafters will afford a suitable angle to the roof. Ascertain the cost of buildings complete, including the brickwork.

FORCING NARCISSI EMPEROR AND SIR WATKIN: J. P. It will be quite safe to introduce these varieties of Narcissus into a temperature of 60° at once. Make sure that the plants are well supplied with water at the roots when once growth is well-established.

HOLLY WEIGHT OF BUNDLES: T. P. E. The bundles quoted in our market list usually consist of ordinary Holly. It is not possible to give the weight of each bundle, but an idea of the size may be gained from the fact that it measures about 3 feet round, and consists of about as much as one man can gather in his arms.

MEALY BUG ON VINES: H. B. We presume that the mixture you refer to is the tar mixture usually employed for cleansing vines. The proportions are one part coal-tar to six parts clay, the clay to be first dried and powdered so that it will pass through a ¼-inch sieve. The tar and clay should be thoroughly worked and mixed together, adding sufficient boiling water to make the mixture of the consistency of paint. It should be smeared over the canes, filling all the crevices, but not over the buds. Keep the specific well stirred during the operation.

NAMES OF PLANTS: H. G. Purvis. Fern, Nephrolepis exaltata, var. Amerpohlil; shrub, Cupressus macrocarpa; seeds, Saponaria sp. probably officinalis. — Subscriber. 1, Cupressus pisifera var. lycopodioides; 2, Olearia macrodonta; 3, Cryptomeria japonica; 4, Eunonymus japonicus var. ovatus aureus; 5, Acanthopanax spinosum; 6, Sciadopityx verticillata. — T. N. R. 1, Crataegus Pyracantha Laelandii; 2, Eucalyptus Globulus.

VERONICA HULKEANA: A. J. In several species of Veronica the ends of the shoots die back in winter. The reason is that they make growth late in the season, and this fails to mature, so that the tender points of the shoots suffer from the low temperature often accompanied by excessive damp. The latter is most injurious. Endeavour to ripen the shoots by keeping the roots dry in October in a position fully exposed to sunshine and air.

Communications Received. — W. T. Ltd.—T. J. P., A. G.—S. McG. and Son—H. S. T.—H. S.—G. L. H. J. W. R. R.—H. F.—J. B. L.—E. M.—W. A. C.—W. P.—J. G. W.—W. B. J. B. A.—W. M.—S. A.—D. M. C. E. E. P.—F. W. J.—T. C. F.—G. W. H. M. V.—H. C. E.—H. A. W.—G. J. L.—R. A. S.—P. L.—O. T.—B. of T.—B. of A.—H. W. W.

THE

Gardeners' Chronicle

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LILIES IN 1915.

IN a general way there was but little to choose between last year and its immediate predecessor; last winter was perhaps even wetter than the one before (1913-14), and December of 1914 in particular set up a record in regard to the amount of rain that fell. During the first half of January, too, low-lying parts of the country were more or less under water, and even on higher land fields were dotted with steely blue pools. This state of things is by no means an ideal one for Lilies, but necessity begets invention, and six wet winters in succession must have forced on the most obtuse cultivator the need for quick drainage under the bulbs of what one may term the dry-land species; an appreciation of the importance of this point will have saved many a bulb from a watery grave in the flood that prevailed a year ago, and seems in process of repetition this winter.

It is becoming increasingly evident, however, that, notwithstanding all the drainage one can give them, the two late-flowering species, *L. Sargentiae* and *L. sulphureum* are not attuned to the moist condition of the earth in such winters as we have had for so many years, and the reason is not far to seek. In a favourable season the first-named Lily goes out of bloom in the south early in September, and dies down some eight weeks after that, *L. sulphureum* following it about a fortnight later throughout. As far as any obvious signs of life are concerned, each remains dormant till about the middle of January; and, as this resting-time coincides with the usual period of maximum winter rainfall, it is not a matter for surprise that during the past five years the deaths among these two species by drowning have been ab-

normal. The fact that the bulbs of either may be kept all but dry while dormant will no doubt have some bearing on the subject when the ecology of these species comes to be investigated.

Under the prevailing conditions it seems wise to defer the planting of these Lilies, and more especially of *sulphureum*, till February is well in sight, and if a choice of two evils has to be made, it will probably transpire that lifting the bulbs at about the middle of November will prove less harmful than leaving them in the ground.

1914 was noticeable for the remarkably early appearance of Lilies in general, and though the bulbs ripened early and well in the dry and genial autumn of the same year, they were in no unusual hurry to make their presence evident in the succeeding spring. Perhaps it was as well, for February was a cheerless month, persistent northerly winds whipping a chilled and sodden earth with icy lash: during the last week of March the wind was exceptionally cold, and though time after time April coaxed up the first soft whisper of spring, it was only to find it elbowed away by bleak and sleety blasts. May turned out wonderfully dry and sunny, but there was always an edge to the wind, and night frosts were so common that one lost count of them. Prospects were none too bright when June and summer came at last, but notwithstanding a temporary lapse at cock-crow on June 19, when there was a film of ice on more than one hill pond, the sun soon had things to rights, and after seven weeks of sunshine without a spot of rain, one began to hope for a repetition of that never-to-be-forgotten year, 1911.

Then came one of those lightning changes beloved of the Clerk of the Weather, for we were suddenly transported back to March and kept there for nearly three dour weeks, during which time the sun seemed powerless against a thick blanket of cloud and incessant chilly rains and mists: the conditions exactly suited *Botrytis cinerea*, and it took full advantage of them, playing havoc with hundreds of robust and promising Lilies: none was exempt, and even regale, a species of strong constitution that usually shows a remarkable degree of resistance, was struck down in scores of instances. Reluctantly one was driven to the conclusion that constitution and high cultivation are not always proof against this pestilence.

September, with more than double the usual allowance of sunshine, succeeded to some extent in making amends by wheedling *L. Sargentiae*, *L. sulphureum*, *auratum* and *speciosum* into an unusual wealth of bloom, and the season ended in remarkable contrast to a wretched beginning.

Of new or little known Lilies, *L. cernuum* recently described in *Gardeners' Chronicle**—has bloomed in this country for the first time during the past summer, and is a welcome addition to the meagre list of pink-flowered species in cultivation. The management of this delightful little

plant is not likely to try the powers or the patience of the cultivator very highly, and it seems to thrive under conditions that suit *L. tenuifolium*.

A hybrid reputed to be the result of crossing *L. Parryi* and *L. Humboldtii* was exhibited by Mr. Perry at the R.H.S. Show on July 6; it was remarkable for the beautiful colour of the petals, and if it has a sound constitution should do something to raise the reputation of Lily hybrids in general.

In the writer's experience hybrids between the parents of this Lily have as a rule but little staying power, at any rate when *L. Humboldtii* is the seed parent. Two years ago this same cross produced one of the most beautiful flowers it can have been the lot of man to see; in shape the bloom was like a refined *Humboldtii*, the ground colour of the petals a delicate citron, copiously marked with purple spots after the manner of *L. Leichtlinii*, of which indeed, so far as the bloom was concerned, the plant might well have been cousin. For all its beauty this Lily has hardly a scrap of constitution, and others from the same seed-pan do not seem to have much more. On the contrary, *L. Humboldtii* mated with *L. pardalinum* generally begets strong offspring.

A Chinese species raised by Bees from seed collected by Forrest on the Tali range flowered at Sealand in the summer, and appeared to be a form of *L. ochraceum* (Franchet); unfortunately, it is of no more than botanical interest, the last thing one can say of the *L. pseudo-tigrinum* collected by Forrest and distributed by Bees. It is a floriferous plant of rapid growth and splendid stature, but refined habit withal. Seemingly quite easy to manage, this Lily gives promise of being as good a representative of the Chinese *martagon* group as *L. regale* is of the *eulirion*.

The Lily which found its way into the catalogues and one or two gardens last year as *L. Biondii* is of the same family as *pseudo-tigrinum*, but has not so far proved the equal of it under cultivation, possibly because of some cultural point that is not yet appreciated.

L. philippinense, raised from seed gathered by Mr. W. R. Price on Mt. Morison (Formosa) at 8,000ft., has flowered in a remarkably generous way at the Edinburgh Botanic Garden under the kindly and discerning eye of the Regius Keeper, and in the guise of a floriferous plant a yard high has quite altered the students' conception of this Lily. Mr. Price noticed that the altitudinous examples of this species had a good deal of colour on the reverse of the petals, and he also observed that the colour deepened as the altitude increased, till at 8,000ft. the white-petalled Lily of the same species growing on the plains was highly coloured.

One may see the same peculiarity of colouring in the case of another Formosan Lily, *longiflorum*, as well as in the Chinese *L. Sargentiae*, a very variable Lily, alike in flower and foliage, but we do not know that the same causes are at work to produce the effect in each case. In some examples of these two Lilies the back of the petals is

* *Gard. Chron.*, Nov. 13, 1915, p. 792

flushed with purple, especially about the midrib, while in others there is no trace of colour unless it be a suspicion of green; the stem of the coloured form is invariably dark purple, and that of the

as a super regale. It has clearly no relationship with *L. Brownii* (if only because the bulb is red and not white, globose and not oblate), and it belongs to a nomadic family of the eulirion group

mens almost invariably labelled *Brownii* or *Brownii leucanthum*. This is a singular state of things, for, so far as the writer is aware, the typical *Brownii* (of Brown) has not yet been found in a wild state.

The Lily on which the names *Willmottiae* and *warleyense* have been bestowed at different times goes on its way regardless of the vagaries of our climate, and is a most satisfactory garden plant. It seems to have but one failing, and that is an inability to stand up without support, clearly the result of high living, which crowds on to a rather slender stem such weight of bloom as it is unable to support.

The same thing occurs in the case of many wild Lilies, *L. sulphureum* and *L. Leichtlinii* for instance, as well as *L. auratum*, *L. speciosum* and *L. Henryi*, to name only a few. In nature these seldom bear more than a modest proportion of the bloom they often yield under high cultivation, and they are inclined to be top-heavy in consequence.

The hybrid *Lilium pardalinum* × *Parryi* which figured in the review of last year's Lily season† continues its triumphant career; it is a veritable giant, and, having added a foot to its stem, stood just 10 feet high last August; this mongrel was in bloom for no less than seven weeks, and is a remarkable garden plant—more than can be said of most *Lilium* hybrids.

The seedlings of that difficult plant, *L. rubescens*, that flowered for the first time in 1914, are now 4 feet high and quite at home; moreover, for two years in succession they have yielded a bountiful crop of seed, so that an ample reserve of home-raised bulbs is assured. Only those who grow Lilies on any considerable scale can realise the inestimable advantage of this happy state of things, for in our country there is little peace of mind for the amateur of Lilies if he has but a handful of bulbs of the rarer species and no reserve to draw upon.

The wastage is considerable, for so many hostile influences combine against the plants before they have had time to become established in what must be to them novel and more or less unnatural surroundings.

L. auratum macranthum, raised from seed received five years ago from Vries Island, has flowered, though the bulbs are no larger than a hen's egg, and as they have been in the ground through two excessively wet winters, and seem so far none the worse, one may hope they may become acclimatised. But if they succeed in braving our often inhospitable climate they have still to run the gauntlet of all the little creatures that carry on business underground and unseen—mice, wireworms, leather jackets, and the rest that find all edible bulbs so much to their liking.

During the year a bulb and seed of *L. Brownii* grown in the Hong Kong Botanic Garden has been received from Mr. Elwes, seed of *L. sp.* No. 183 and 316 from Mr. Farrer, and bulbs of *L. cernuum* from M. Kesselring. A hybrid of unknown parentage has come from Mr. Bowles, and bulbs of the Chinese species already referred to from Messrs. Bees. Major Sanderson has sent bulbs of a Lily collected in Montenegro; seemingly a debased form of *L. pyrenaicum*.

A new and apparently undescribed Korean Lily sent to the writer by Mr. E. H. Wilson has flowered, as well as another from Kiauchow, and both promise well.

Farrer has reported‡ that in the course of his wanderings on the borderland of Tibet he lighted on a Lily he considered likely to be *L. Davidii*, and if this should happily prove to be the species he found and has sent home, it will not be the least of the prizes the horticultural world will owe to him; it is to be hoped that *L. Duchartrei* too may come under his collecting eye.

One would have supposed that the United States has been so systematically botanised that the discovery of a new species of *Lilium* any-



FIG. 19.—FLOWER-SPIKE OF *LILIUM ROZEZII*, FROM A FOUR-YEAR-OLD SEEDLING. COLOUR OF FLOWERS, ORANGE (Pierre-de-Fiel No. 3 *Repertoire du Couleurs*) SPOTTED WITH PURPLE.

white-flowered form as invariably green. In either case the bulbs are identical.

The so-called *L. Brownii* from Kansu has again flowered in wonderful fashion, and pending identification may be described in a general way

found over a considerable range of Western China. Representatives of the group—which includes *sulphureum*, *Sargentiae*, *regale*, *formosum* and some of the Burmese Lilies—are continually turning up, and herbaria possess numerous speci-

† *Gard. Chron.*, Jan. 9, 1915, p. 15.

‡ *Gard. Chron.*, Jan. 2, 1915, p. 1.

where except in some out-of-the-way corner of the extreme West was unlikely, but Farwell reports (*Bull. Torrey Bot. Club*, vol. 42, No. 6, 1915), the finding of two new species in *L. michiganense* and *L. peramoenum*, the former with a brace of varieties, *m. umbelliferum* and *m. uniflorum*. *L. michiganense* is said to be similar to *L. canadense* in foliage and *L. superbum* in flower, and sounds like an intermediate form. *L. peramoenum* is described as similar to *L. michiganense* except that the leaves are more numerous and narrower.

The illustration (fig. 19) shows the lengths to which *L. Roezlii* is prepared to go under favourable circumstances, for the specimen was no more than four years old when photographed. J. I. Grove.

MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.*

XXVI.—THREE COMPLAINTS.

My first complaint is against what I cannot but consider the impatience and unreasonableness of certain readers, for, amid many most welcome notes of interest and appreciation, I perceive also another tone. Some people, it would seem, do not realise the limited aim and scope of my articles in the *Chronicle*. They are not satisfied with the elaborate and full details there given as to the habits and favoured site of every important plant, but require exact geographical information in a jargon of Chinese syllables as to the precise locality occupied by each. How would this help an intending cultivator? (Unless, indeed, he wish to come out and collect on my trail, in which case I shall be happy to give him all the help I can.) And, in these preliminary notices I have no further purpose but to assist the cultivator with relevant information. Even had I aimed at more, or the scale of my articles admitted, I should still, last year, have shrouded my precise movements and whereabouts in a tactful obscurity, conscious as I was of no fewer than three other collecting parties afloat on the Chinese borders, one of which did actually come tumbling in upon me, after all, at Siku. This season matters are different; the need of vagueness has vanished, and my articles already will be found to be much more precisely localised. But, at the same time, let me quite definitely declare that they are only meant for preliminary hints and notes.

Another objection is based on misunderstanding of circumstances, rather than on positive unreasonableness. Why don't I give the Chinese names of places and mountains? In the first place I keep such for a later volume: in the second, they would in no way guide a cultivator: in the third, they are most often lacking altogether. Dear reader, do try to drop your memories of the European Alps, where every boss and buttress is known by name; try to realise the Sine-Thibetan Alps as a series of enormous No Man's Lands, unapproached and unknown. The Chinese hate big mountains and ignore them as much as possible. The Tibetans go up into their high alps for pasture, but hold the grim peaks above in a great fear that forbids familiarity. Therefore a range, indeed, may have a generic name, or some isolated mass, very conspicuous or holy, may have a personal one; but the huge corrugations and castellations of a mountain chain twice the size of Pyrenees or Dolomites, are for the most part utterly nameless. Even the generic description of an alp-system is vague—Tien S'an, Min S'an, Ala S'an—with hardly ever a closer differentiation made. And, while it would be easy for me to pack my pages with Kwangs and Kwongs, these would all be merely approximate guesswork-

names, as never does one get the same Kwang or Kwong twice over, even from the same people, and even for the same hill-flank or tower. Therefore, I am often forced, for convenience and for the moment, to invent a title, trusting that the natural sense of my readers will enable them to realise that the locality will be fully fixed beyond mistake in a fuller work. Some readers wonder whether Thundercrown ever had a Chinese name. Oddly enough, it has; odder still, that name is—Thundercrown. Would it be any more vivid to you under a cloak of uncouth Chinese monosyllables than under their precise English equivalent? Some people wonder whether anybody will ever know Thundercrown after I return from the East. Well, it shall not be my fault if they don't; and if anybody going to Siku is foolish enough not to recognise (even from my descriptions of hitherto) that gigantic and lonely 15,000 feet mass of limestone immediately behind the town, he had really better stay at home. To such a pitch of childishness are we come that the name "Roterspitze" is ob-



FIG. 20 MR. REGINALD FARRER'S EXPLORATIONS—THE SMALL VARIETY OF PRIMULA SIBIRICA.

jected against me! Now, the Roterspitze is an otherwise quite nameless, but quite unmistakable apex in the Great Ridge above Siku. What was I to call it! Red Ridge was already engaged, and really I hardly can feel myself unpatriotic in remembering that ruddy rampart which joins the S. Shen to the Rosengarten chain! Really, let us have a little more candour in our cavillings and a little less of gluttonous and untimely appetite for irrelevant information beyond the scope of a *Chronicle* article to yield. And, meanwhile, I give fair warning that I shall continue for present purposes translating Chinese names where obtainable, and inventing others where necessary: to render a native name into a softer English one can hardly be called a crime by a race that has tried to turn Gaurisanka into "Mount Everest," and immortalised yet another noble peak in ridicule as "Mount Bullock-Workman"!

Satisfying everybody, though, has been known for a hopeless game since the days of Aesop, and

the soil of gardens is very favourable to criticism. Let me then return to more reasonable and friendly souls, and address to them my second complaint. This is against the exaggerated estimate proffered by the Russians, of the floral wealth of this district. The Da Lung Alps have long been almost legendary among botanists, both in England and America, for the reputed richness of their flora. There is no splendour of forest, the valleys run too high to admit of any glory of flowering shrubs, and the tops themselves are non-calcareous, with the usual poverty of botanical result, the same species accompanying one right from the alpine level to the utmost arêtes, instead of yielding to different ones as on more vital rock. In the copses of Wolfstone Dene (please, Sir, a literal translation of Lang-Shu-Gô—pronounce it rightly if you can) there is a pink *Pacony*, indeed, less brave than that of Thundercrown, but breaking the monotony of the dull Poplar and Willow woodland, interspersed with two *Berberis*'s, and a set of hideous *Ribes*. Much the finest child, however, of the lowlands is the beautiful atragenoid *Clematis* (see fig. 21), artificial-looking, and of softest crystal blue, that wanders trail amid the twigs of the ghyll coppices between Bridgehead and the Halls of Heaven—you won't find Chao-To on the map, so it will save you trouble to think of it as Bridgehead, which it is). Down in the great plain of the Abbey, too, the *Stellera* is now in fulness of fragrant beauty, and the small variety of *Primula sibirica* (see fig. 20) along by the rill-sides is daily being nibbled out of seed-hopes by the cattle. So much for the lowlands; by degrees I hope to lead you higher, but there is now no time.

For my third complaint, I must address to our Editor, and congratulate him on a contributor too delicate to dun him for huge damages in these evil days, for what do I read, in my account of the train that accompanied me south to Siku? Finally, there appears a mule "commandeered to carry the cask!" Alas! alas! where is now my character, and my reputation in temperance circles? This ruin of my fair fame would surely stand me in for many hundreds of much-needed pounds. But I will sacrifice myself, and show a rare and delicate generosity. This gross libel is founded on a mere misprint. That mule was commandeered to carry, not the "cask" (there was none), but the "cook."

MECONOPSIS "WARDII."

I do not wish to seem guilty of adding to the present difficulties of *Meconopsis*, and I notice that Sir David Prain, in his monograph, quotes me as having applied the name "*M. Wardii*" to what is really *M. Prattii*, while a later writer in the *Gardeners' Chronicle* also quotes my infelicitous citation of "*M. Wardii*" as apparently implying my belief in the species. Let me correct matters: Sir David has misapplied my note, which occurs in the *Chronicle* of February 27, 1915, apropos of what I believed to be a new *Meconopsis*, *M. Psilonomma*, now duly recognised, but safeguarded myself from the presumption of seeming to claim a novelty by adding, "For I do not know the diagnosis of *M. Wardii*." In point of fact, before leaving England I had happened on several allusions in Mr. Ward's book to a *Meconopsis* "*Wardii*," and, in default of any diagnosis or further information it is not easy to be up-to-date in Thibet, I reserve my judgment on *M. Psilonomma*, for fear it should perversely prove identical with this "*M. Wardii*," of which I knew nothing except the name. This is my solitary allusion to *M. Wardii*, and has no reference whatever to *M. Prattii*, as will be plain if the quotation be verified. Even the very name of *M. Wardii* now proves to be empty; its author, according to your recent writer, merging it (though this statement is not confirmed, in Sir David's monograph, where I have found no allusion whatever to *M. "Wardii."* excepting my own quotation

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 31, November 14 and 28, January 2, February 27, March 20, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 10, November 13, 20 and 27, December 11 and 25, 1915, and January 8 and 15, 1916.

of the bare name, grounded solely on Mr. Ward's book) with *M. Prattii*. Your writer adds, "Farrer notwithstanding"—the poor Farrer in question never having dreamed of asserting even the existence of any *M. Wardii* except on Mr. Ward's authority, and certainly never having applied the name to *M. Prattii*. Sir David Prain's misconception having arisen through his not realising that the passage in the *Gardeners' Chronicle*, February 27, 1915, p. 110, referred throughout to *Meconopsis Pseudonoma*. *Reginald Farrer*, Peking, December 13, 1915.

NEW OR NOTEWORTHY PLANTS.

HESPERALOE FUNIFERA.* TRELEASE.

RECENTLY having occasion to look up what Professor Trelease had to say about *Yucca funifera*, I find that in his "Revision of the Yuccae" in *Missouri Botanical Garden Report*, 1902, p. 38, under *Hesperaloe funifera*, he makes the following statement:—"Many years ago the Tonels [the brothers Tonel] introduced into European gardens a plant which seems never to have flowered there, and which was mentioned a number of times under the garden name of *Yucca funifera*. No *Yucca* is yet known which possesses channelled filiferous dorsally striate leaves comparable with those of *Y. funifera* as described, and although its apparent complete disappearance from cultivation makes its identity a matter of conjecture only, the foliage description so well fits this Mexican species of *Hesperaloe* as to leave little doubt in my mind that the latter should bear the name of *H. funifera*."

As this statement points to *Yucca funifera* being practically an unknown plant, I here place on record what I know about it.

Some ten or twelve years ago I paid a visit to the late Mr. Justus Corderoy, of Blewbury, near Didcot, who then had a very interesting collection of succulents, among which were many rare plants, one of them being a specimen of *Yucca funifera*, which Mr. Corderoy told me he had obtained between 30 and 40 years previously (I think, from memory, he said it was about the year 1868) from the firm of Verschaffelt, and that he believed his plant to be the only one in the British Isles, as he had been informed by Messrs. Verschaffelt, when he first obtained it, that there were only three plants of it in Europe. Mr. Corderoy was never able to propagate it, and a few years ago he parted with the plant to the Royal Botanical Gardens, Kew, where it still thrives, and leaves of it are preserved in the Kew Herbarium for future reference. This plant Professor Trelease is quite correct in identifying with *H. Davyi*, Baker, the type of which is also in the Kew Herbarium.

This plant of *Yucca funifera* as it now exists at Kew has a short stem rising about 3 inches above the ground and bears eight leaves in a very lax rosette. They are $3\frac{1}{2}$ feet long and $1\frac{1}{4}$ inch broad, very deeply channelled, with white edges, which peel off into stout ascending or recurving white fibres 6.9 inches long and $\frac{3}{4}$ line thick; the tip for 2 to 5 inches is of the same hard consistence as the edges, appearing withered, and is of a pale brown colour. Both surfaces are finely striated, uniformly deep grass-green and decorated on some parts, but not all over, with peculiar zig zag shagreen markings, resembling those on "watered" silk. At Kew the plant is constantly grown under glass, but Mr. Corderoy used to place it (with others) in the open air during the summer months, under which conditions the leaves attained a length of 5 feet.

It would be interesting to know if any other specimen of this plant exists in Europe.

* Synonymus, *H. Davyi*, Baker; *H. Engelmanni*, Baill.; and *Yucca funifera*, Koch.

Since writing the above I have consulted the catalogues of Jean Verschaffelt from the autumn of 1867 to the summer of 1874 inclusive, and therein find it repeatedly stated that at that period there were "only three plants known in Europe" of *Yucca funifera*, thus confirming Mr. Corderoy's statement. In those catalogues the plant is priced at 250 francs. *N. E. Brown*.

ORCHID NOTES AND CLEANINGS.

CATTLEYA MAGGIE RAPHAEL.

MESSRS. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, have a large quantity of a very fine type of this charming winter-flowering Orchid. During the winter months they have had a continuous display of from one hundred to three hundred of the large, fragrant blooms, and there is promise of more well into the spring. The centre stage in one of the houses is filled mainly with varieties of this pretty Orchid. The greater number are of the white-petalled class, some having the segments tinged with rose, and the labellums varying from light rosy-mauve to purplish-crimson, with clearly defined gold lines from the base. The large size and good shape of the flowers compared with the old form well demonstrate the advantages of selecting fine forms of *C. Dowiana* and *C. Trianae* as parents. Good seedling *Odontoglossums*, interesting *Laelio-Cattleyas*, and fine and rare *Cypripediums* are also in bloom at Orchidhurst.

ODONTOGLOSSUM CRISPUM IMPERATOR.

Many fine hybrids and forms of *O. crispum* are in flower in the collection of De Barri Crawshaw, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), the latter of the true Pacho type, comparing favourably with the hybrids. *O. crispum* Imperator stands out as the best, largest and most richly marked. The broad sepals and petals, which are of fine substance, are white tinged with lilac, the sepals bearing several broad, deep purple blotches, and the fringed petals a cluster of blotches of similar colour with some surrounding smaller rose spots. The lip is white, with red brown blotches in front of the yellow crest. The variety has been in Mr. Crawshaw's collection for many years, and the plants at Rosefield can scarcely be excelled.

O. crispum Angel, a grand white form with several cinnamon-brown spots in the middles of the segments, has distinct features, and this, with other pretty blotched varieties, is in bloom at Rosefield.

PLANT NOTE.

IBERIS LINIFOLIA, L.

ALTHOUGH biennial, this pretty autumn-flowering Crucifer is worthy of attention in English gardens, where it is little known. Professor Bryan, F.R.S., of Bangor, tells me that he brought seeds to England in 1890, and that the plant grows freely from seed, "and produces in September large umbels from 12 to nearly 18 inches in diameter, one mass of lilac flowers. An excellent garden plant." The umbels are compound, or perhaps more strictly corymbs. In my "Winter Notes from Hyères" (*Gardeners' Chronicle*, December 20, 1913) I mentioned that "the small mauve flowers of *Iberis linifolia*, on wiry stems 2 feet high, lend a note of colour to some of the woods." Like most of the genus it is glabrous. The root-leaves are linear-lanceolate, almost entire; and the entire stem-leaves are linear. The silicles are broad, winged only at the top, and the style far exceeds the lobes. The rather small flowers are sometimes white. It seems to prefer open woods and rocky limestone ground, and is native in South-Eastern France and Liguria. The annual *I. umbellata* with larger flowers and leaves, grows in similar places, but with a wider distribution. It is often cultivated *H. S. Thompson*.

The Week's Work.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

CUCUMBERS.—Make a sowing of Cucumbers to furnish plants for succession to those raised late in the autumn. Place the seeds singly in thumb pots filled with a mixture of fibrous loam broken finely, leaf-mould, and partly decayed horse manure. Plunge the pots into a bottom heat of 75°, and exclude the light until the seeds have germinated, when they should be fully exposed to the sunlight. When two rough leaves have developed, set the plants on raised mounds of rich soil on a bottom heat provided by a hot-bed or other means. The atmospheric temperature should not be lower than 65° by night, with a rise of 10° or more by day. Lightly spray the foliage on mild and sunny days, and keep the atmosphere humid at all times. Ventilate the house with extreme caution; in mild weather the ventilators may be opened a little at midday. Growers who do not possess all the facilities for this crop should defer sowing until February.

SALADS.—Exercise forethought for maintaining a regular supply of salads. An early variety of Cabbage Lettuce may be sown for pricking out later in hot-beds, or, if desired to grow quickly, in boxes. Regular supplies of Endive and Chicory should be blanched as required. This may be done in frames by a covering of mats, leaves, or straw, but a little warmth is beneficial, as it counteracts the evil effects of too much damp that would cause decay. A good plan is to place the plants in batches in a dark mushroom house or under the stage of a warm greenhouse, where they must be kept in darkness. Make sowings of Mustard and Cress from time to time in boxes placed in a fairly dry structure to prevent damping off.

EARLY CARROTS IN FRAMES. A small sowing of Carrots for early supplies should be made on a mild hot-bed in a brick pit if available, on account of the difficulty of maintaining the requisite temperature from an ordinary bed thus early in the season. This can only be done by placing successive linings of fermenting materials and making the bed very deep. Sow in drills in from 6 to 9 inches of light sandy soil, such as old potting soil riddled finely. A depth of from 9 to 12 inches from the glass is necessary. A little protection is necessary during frost, or the plants may "bolt" instead of forming roots. A uniform condition of atmospheric moisture should be maintained. Inimitable Forcing, Early Gem and Favourite are suitable varieties.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chapstow, Gloucestershire.

CYRTOPODIUM. The growth of the tall pseudo-bulbs of these handsome orchids is completed, therefore the plants should be rested in the intermediate house, and kept fairly dry at the roots. When growth commences afresh and the flower-scapes begin to appear, the roots should receive more water, increasing the amount according to the needs of the plants. At this stage repotting may be done, and the plants being vigorous rooting, a rich compost is recommended. They require a similar soil to *Cymbidiums*; the principal material should be rich fibrous loam, from which all the finer particles are removed. A few partly-decayed leaves may be added. Throughout their season of growth the plants should be placed in a warm, moist house, such as a plant stove, and afforded copious supplies of water. Plants that are not to be repotted, but have filled their receptacles with roots, should be watered with liquid manure once a week, discontinuing this feeding as the pseudo-bulbs approach maturity. The best garden species are *C. Andersoni* and *C. punctatum*.

COELOGYNE CRISTATA AND ITS VARIETIES.

These useful winter-flowering Orchids will soon commence to flower, and the amount of water at the roots may be increased. Care, however, must be exercised to prevent water collecting in the young growths or the flower-scapes may decay. To prolong the flowering season a few of the earliest pans may be placed in a little extra warmth. When the plants are in bloom they should be arranged in a house where the atmosphere is moderately dry, then the flowers will remain in good condition for a long period. An excess of moisture causes damp patches to appear on the blooms. After the spikes are removed, keep the plants moderately moist until the roots commence to grow freely, when water may be afforded more liberally.

CALANTHE.—Such species of *Calanthe* as *C. vestita*, *C. Veitchii* and the hybrid *W. Murray* as are in bloom should be arranged with a few *Adiantum* Ferns. When the spikes are cut the pseudo-bulbs will require a decided rest in a temperature not lower than 50°. If the pseudo-bulbs are weak, it is advisable to remove the scapes directly the last flower is fully expanded. Some growers allow the pseudo-bulbs to remain in their pots during the resting season, but this is not essential, and, where stage room is limited, they may be stored in boxes containing a little sand. Shake away all the soil and cut off most of the roots. Water will not be needed until after the plants are repotted. The later-flowering species, of which *C. Reguieri* may be cited as an example, may be kept just moist at the roots until the foliage has decayed; when the spikes are cut they should receive the same kind of treatment as advised for *C. Veitchii* and other early flowering species.

PLANTS UNDER GLASS.

By E. HURRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

HIPPEASTRUM (AMARYLLIS).—Some of the most promising bulbs may be brought into a house having a moderately warm temperature. They will need top-dressing with rich soil, but before this is done thoroughly soak them with water, and remove a portion of the old soil from the surface to make room for the new compost. At this season it is wise to plunge the pots in a hot-bed of moderate warmth. Very little water will be required until the leaves and roots commence to grow actively, but the plants should be sprayed lightly with tepid rain-water twice daily. Successional batches of bulbs may be started at intervals of two or three weeks.

GLOXINIA.—A batch of *Gloxinias* may be started into growth. Place the tubers in boxes containing sifted leaf-mould, and start them in a light position in a warm, moist house. When growth commences they may be potted into their flowering pots, using compost consisting of fibrous loam, peat, leaf-mould, crushed charcoal, and coarse sand. Towards the end of the present month *Gloxinia* seed may be sown to raise plants for flowering in autumn.

CINERARIA.—The earliest plants of greenhouse *Cinerarias* are developing their flowers. They have filled their pots with roots, and need examining frequently for water; stimulants may be given more frequently than hitherto, and at an increased strength. If it is desired to hasten the development of the flowers the house may be kept a little warmer, but it must be remembered that the *Cineraria* is a cool greenhouse plant, and does not respond readily to forcing. The later plants may be kept growing steadily in a cool house or pit, using fire-heat only to keep out frost. The greenhouse *Cineraria* is very subject to attacks of aphids, but light fumigations with a nicotine compound once a fortnight will keep the plants free from this pest.

MIGNONETTE.—Plants raised from seed sown last autumn will soon begin to develop their flowers, and will need a little stimulant in the form of a weak liquid manure or soot water. Support the growths to neat stakes, and stand the pots near to the roof-glass in a cool house. Another sowing may be made now either in 2½-inch pots or in large ones, in which the plants will flower.

CLEANSING PLANT HOUSES.—The present is the most favourable season to overhaul the glass-houses. They should be thoroughly cleansed and all the plants, whether growing in pots or borders, should be overhauled and cleaned. The glass and woodwork should first be scrubbed with soapy water, afterwards washing the materials on the stages. Climbing plants should be pruned or thinned as their requirements demand, and the shoots tied neatly to the trellis. The soil in which the roots are planted needs an annual top-dressing, and this may be done now. First remove a portion of the old soil to make room for the new compost, which should consist of a mixture of loam, peat, leaf-mould and a good sprinkling of coarse sand.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

PROPAGATING BUSH FRUITS. It is a good plan to propagate a certain number of the best varieties of bush fruits annually, in order to have healthy stock always on hand for new plantations, or for filling up gaps. Take strong, healthy shoots of last year's growth, about 15 inches long, cutting away the weak tips. Remove all the buds from the lower two-thirds of the shoot, leaving five or six buds on the top to form the main branches of the future bush. The cuttings should be taken square, just under a joint, and inserted firmly in a shady border, for instance, on the north side of a wall or hedge. They should be looked over occasionally, in case they become loosened by frost, in which case they must be made perfectly firm again, with the bottom of the shoot resting on the ground.

BLACK CURRANTS.—The method of preparing the cutting as described above applies principally to Gooseberries and Red and White Currants. For propagating Black Currants the shoot is cut in precisely the same way, but no buds are removed. After the first season's growth the young bushes are cut down nearly to the ground level, with the result that strong shoots will be thrown up right from the base. All bush fruits repay liberal treatment. Black Currants revel in strong loam in a somewhat damp situation, and if kept free from mite can usually be depended upon to give excellent crops. Partial shade is not injurious to Black Currants. Established bushes in sound health should be pruned directly after the fruit has been gathered, but if this was not done at the proper time it should be done at once. Cut away as much of the old fruiting wood as can be spared, leaving a good proportion of the strong young shoots springing from the base. Do not leave too much even of the young wood, as crowded bushes are never satisfactory.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major Hoare, Ellfield Manor, Basingstoke, Hampshire.

EAST LOTHIAN STOCKS.—Seed of East Lothian Stocks may be sown during the coming week. They are harder than the Ten-week Stock, flower more freely, and are more compact in growth. True, there is not so wide a range of colour, nor are they perhaps quite so sweetly scented, but we may well extend the cultivation of this useful flower without wholly excluding the Ten-week Stocks. I prefer the white and pink varieties, which come fairly true, and predominantly double if the seeds are procured from a good firm. The method which I practise I am tempted to term the super-culture of East Lothian Stocks, as it has invariably yielded first-class results—the plants when at the zenith of their growth measuring 18 inches through, and giving in many instances over fifty spikes of flowers at one time. Briefly, the method is to sow towards the end of January, transplant the seedlings closely into boxes, pot them singly later into 3-inch pots, and eventually into 5 or 6-inch pots, from which size they are planted out at the first opportunity in May. If the seedlings are pricked off early and not syringed while they are in a warm house, I find that less than 1 per cent. fail through damping. Grown without a check, and planted

before they become unduly pot-bound, they will yield central spikes with over one foot of flowers, followed by other spikes throughout the season.

SOWING ANTIRRHINUMS.—The popularity of *Antirrhinums* is even now less than they deserve. They are bright, free-flowering and easily grown plants. Good, hard, stocky plants, suitable for setting out in May, may be obtained from a sowing made now. Plants from seeds sown at this date work more closely into the scheme of successive bedding than those sown in autumn or grown from cuttings inserted at that time. Sow the seeds thinly, germinate them in a temperature of 50° to 55°, and prick out the seedlings at an early stage into boxes at a distance of about an inch and a half apart. This close pricking-off economises space under glass, and by the time the young plants meet and tend to overcrowd they can be transplanted in a bed beneath the shelter of a box frame. Later they may be set further apart, and the frame removed when they have started to grow freely. Self colours give the most pleasing results, and reliable seed comes mostly true, the more so if at each time of moving the seedlings we eliminate those which by their habit or colour of leaves are suspected of being rogues. Varieties which have given good results are Coral Red, Orange King, Fire King, Delicate Pink, and Deep Crimson. I refer here to the intermediate section, which is decidedly the most useful for ordinary bedding, but a few of the tall-growing section should be grown. Although usually catalogued at 3 feet in height, these tall varieties often approach, and sometimes exceed, 5 feet.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady Nunburnholme, Warter Priory, Yorkshire.

LATE VINERIES.—If Grapes are still hanging on the vines, cut them at once, for they will keep just as well with the stems in bottles of water in a Grape-room where the temperature is about 43°, as on the vines. Choose a fine, dry day for transferring them to the bottles. The rods may then be pruned, the houses thoroughly cleansed, and afterwards kept cool until the time when it is desired to start the vines. Top-dressing or any other necessary work to the border should be completed forthwith.

PINES.—The earliest Queen Pines should be started in order to obtain ripe fruits in May and June. It will not be necessary to add much fresh tan to the hot-bed if the number of hot-water pipes is sufficient to maintain the necessary temperature, which should range from 80° to 85°. In mild weather the night temperature may be 65° to 70°, but 60° will be suitable during times of severe frost or very cold winds. The day temperature in mild weather should be 70° to 75°. When the maximum temperature is reached and the thermometer is still rising, admit a little air. In selecting the plants for early forcing choose those which matured their growth early, which are thickest at the collar, and open in the centre, as these are the likeliest to show fruit without making more growth. Remove a little of the old soil from the surface, and top-dress the plants with loam containing a little soot and vine manure, ramming the soil moderately firm. Use clear water warmed to a temperature of 80° for the roots, and see that the whole ball is moistened. Do not syringe the plants overhead, but sprinkle the paths, walls, and surface of the beds, and keep the evaporating troughs filled. Successional plants should be grown in a night temperature of about 58° to 60°, and a bottom heat of 70°. The plants should be re-arranged where the general stock has been drawn upon for the earliest house, and their pots partially plunged, but without the addition of any fresh materials, as they should be rested for at least another month. Examine each plant at short intervals, giving especial attention to those near the hot-water pipes, to see if water is needed. The same remarks apply to suckers which have filled their pots with roots, for they soon suffer from the effects of drought; extreme soil dryness might cause them to bolt later when the temperature is raised.

EDITORIAL NOTICE.

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Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JANUARY 25—
Roy. Hort. Soc. Coms. meet. (Lecture at 3).

WEDNESDAY, JANUARY 26—
Roy. Soc. of Arts meet. (Lecture at 4.30 p.m. on "The Effect of the War on Cotton Growing.")

SATURDAY, JANUARY 29—
Nat. Auricula Soc. (Northern Sect.) Annual meet.

AVERAGE MEAN TEMPERATURE for the ensuing week, deduced from observations during the last Fifty Years at Greenwich, 39.2.

LOCAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 20 (10 a.m.); Bar., 29.9. Temp., 48°. Weather—Sunny.

SALES FOR THE ENSUING WEEK.

MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Potentials, &c., at Stevens' Rooms, 38, King Street, Covent Garden, at 12.30.

MONDAY, WEDNESDAY, AND FRIDAY—
Hardy Bulbs at 12, Herbaceous Plants, Shrubs and Roses, at 1.30. By Protheroe and Morris, at 67 and 68, Cheapside, E.C.

WEDNESDAY NEXT—
Palms and Plants at 1; 790 cases Japanese Lilioms at 3, by Protheroe and Morris.

THURSDAY NEXT—
Special Sale of Roses, by Protheroe and Morris, at 1.

Latent Life.

It was surely a gardener who devised the story of the Sleeping Beauty and Prince Charming. The children to whom he told the story cared nothing for the allegory of dormant vegetation awakened by the kiss of spring. They annexed the earthly story and ignored the heavenly meaning; but the gardener moving among his plants and observing the signs of their awakening finds the allegory more charming than the primer. He cannot fail to ask himself curious questions: What lulled these plants to rest, and what is the alarm which shall awaken them? It is easy to understand that it would fare ill with tender things if they endeavoured to carry on their active, fragile life in the cold and dark of winter, and it is no less easy to realise that if they are to make the most of fleeting summer, these plants must be up and doing as soon as light and warmth make life worth living. But to recognise that an action or process is fit and proper is one thing; to explain how it comes about that such an action or process is performed unconsciously by the plant is quite another.

Like the many plants of the garden, the seeds which we shall soon be sowing have

been sleeping all these long months. Many of them will awaken in a day or two when they find themselves in warm, moist earth; but others are apt to prove themselves more sluggardly, and, like some human beings, will need to be treated very roughly before they are quickened into active life. Thus, as the gardener knows well, it is wise to let the frost get at such seeds as those of the genus *Rubus* if we do not wish to wait an unconscionable time before the seedlings appear. In other cases, as, for example, certain Lilies, chemical means may be employed to provoke slumbering seeds to awake. An hour or two in a solution of iodine, made by placing a few crystals in water containing a pinch of potassium iodide, causes the embryo to pass from latent to active life.

What is the nature of this latent life which many plants and some animals exhibit when outward circumstances are untoward? During this period are all vital functions in abeyance, and are the seeds or plants in a state of suspended animation, or are the life processes still carried on albeit at an almost infinitely slow rate? Over these questions philosophers have puzzled and quarrelled. Some have urged and claimed to prove that in the dormant seed life is suspended altogether. To express this condition they have coined the term latent life. Others deny the possibility of such a living death susceptible of such a resurrection, and maintain that, whilst the seed or plant sleeps deeply, breathing and such like processes still go on, although at the slowest rate. To them the dormant plant is living, and they speak of its life as *une vie latente*—a dead-slow life.

Nor is the problem one to interest only academic philosophers. Great issues may depend on the answer. For example, if a resting seed is indeed in a state of suspended animation—capable of life, and yet using up none of its store of energy—it follows that, provided the conditions are favourable to the continuance of the resting state, that seed might remain for aeons. As Professor Becquerel* suggests, the botanist might hope not too vainly to see some day the resurrection of fossil plants from seed buried ages ago beneath the polar ice. When the last night falls upon our earth and the sun is extinguished and the frigid land dries up, seeds imprisoned in the soil might by some cosmic seed sowing find themselves borne to a new planet and, in more genial surroundings, becoming quickened into life, might play the part of pioneers in the stocking of that starry land. These are fancies, it is true, but it is a good thing to be fanciful, and to do violence sometimes to the probable.

The dispute between the rival theories of latent life and relaxed life seems to have been finally settled in favour of the former, for Professor Becquerel has shown that it is possible, by very thorough drying, to keep seeds in conditions in which life processes cannot go on—as, for example, in an almost complete vacuum—without destroying their capacity for germination. He, as well as others, have also proved that thoroughly well-dried seeds may be

* Latent Life, *Annual Report of the Smithsonian Institution*, 1914.

subjected to exceedingly low temperatures, for example, 250° C. below zero, without impairing their powers of germination. In this experiment the rivals latency and dead-slowness of life find reconciliation; for, as has been calculated, if life processes go on at all at a temperature of 250° C. below zero, these processes are slowed down so exceedingly that the germinative power would diminish no more during three million years at this temperature than during one day at a temperature of 10° C. above zero. Now the longest lived of seeds are certain members of the Leguminosae, which have been proved to germinate after nearly a hundred years. If such seeds were thoroughly dried and kept in a temperature of 220° below zero they should prove capable of germination at the end of 200 billion years. Thus we reach the paradox that the nearest approach to immortality in this our mortal life is made by dormant seeds and spores; truly a curious illustration of the apothegm: he that saveth his life shall lose it!

In practice it is found that unless special precautions be taken the life of seeds is very limited; in some cases seeds such as Parsnip and various grasses lose their power of germination in the course of a year or two, in others they retain it for 5 or even 10 years. It is probable that were it worth the while of our seedsmen the period of viability of commercial seeds might be extended very considerably. But although just now it would be very convenient if seedsmen could have recourse to stocks of preserved seeds, in normal times the world's harvest amply suffices for the next year's needs.

Of the less vigorous dormancy of hybernating trees and shrubs but little is known. Yet here, also, are many problems which would well repay investigation. These we may hope to deal with subsequently. It must suffice now to emphasise the facts, too often ignored by those who neglect science, that the awakening of life in the spring of the year is the more wonderful the closer it is examined; "at the approach of science the mystery of life recedes but grows greater."

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting of the Surveyors' Institution will be held in the Lecture Hall of the Institution on Monday, February 7, at 5 p.m., when a paper, entitled "Dilapidations—Some Notes and Suggestions," will be read by Mr. C. E. Slater.

BOARD OF AGRICULTURE APPOINTMENT.—Lord SELBORNE has appointed Sir GEORGE SALT-MARSH to an advisory and administrative post at the Board of Agriculture and Fisheries, in connection with arrangements which are being made for supplies of grain to the British and allied Governments.

TRIALS AT WISLEY. During 1916 the R.H.S. will conduct trials of perennial Delphiniums, three plants of each variety to be sent by February 29. As considerable confusion exists with regard to the naming of Mossy Saxifrages in gardens, a collection of all the forms in cultivation is being obtained at Wisley in order to compare them and determine their nomenclature. The Director appeals to growers for two plants of each variety to reach Wisley by February 29. The Director would

also be glad to receive Sedums to add to the Wisley Collection for the same purpose. No entry forms are required; the plants should be sent by the end of February.

AWARD OF THE GEORGE ROBERT WHITE MEDAL.—It is a matter for congratulation that the George Robert White Medal has this year been bestowed by the Massachusetts Horticultural Society on an English gardener and collector, Mr. E. H. WILSON, whose achievements as a plant collector are known to everyone in the horticultural world. The George Robert White Medal of Honour was founded by Mr. GEORGE ROBERT WHITE, of Boston, U.S.A., for the purpose of giving suitable recognition to those who have accomplished important work in horticulture, and the fund was vested in the Massachusetts Society to make the award annually. While the medal is intended principally to recognise work accomplished by a resident of the United States, it may also be awarded to a person, commercial firm, or institution of some other country, the result of whose work in horticulture may be of direct benefit to the interest of horticulture of the United States. The medal is struck in 24-carat gold, is 2½ inches in diameter, and weighs between 7 and 8 ounces. The first award of the medal was made to Prof. SARGENT, Director of the Arnold Arboretum, in 1911.

DIRECTORIES, ALMANACS, DIARIES AND OTHER ANNUALS.—To the gardener, florist, and nurseryman the *Horticultural Directory*, now in its 57th year, is one of the most useful of these yearly publications. The information has been brought up to date, including the new postal rates; but this year the alphabetical list of gardeners' names and addresses, which formed a particularly useful feature of previous issues, has been omitted. *Vinton's Agricultural Almanac* is more useful to the farmer than to the horticulturist. The issue for 1916 contains all the features which have made it popular, and the information given is accurate and useful. From the Lockwood Press comes a new diary, with the imposing title of *The Fruit, Flower and Vegetable Trades' Diary and Compendium*. The pages, each containing a week, Sunday being excluded, are interleaved with blotting paper. At the beginning and end are a number of useful schedules, recipes, and statistics of various kinds. *Webster's Foresters' Diary* appears this year for the fourteenth time. The information given at the beginning of the diary is excellent, and will be invaluable to all who deal in timber. The diary part of the book has the advantage of giving ample space for notes, as there are only two days to each page. *Willing's Press Guide* contains a comprehensive list of publications in the United Kingdom, as well as the principal organs in the Colonies and abroad. This standard work is well known for its accuracy, and is an indispensable companion for editors and those who write for the Press.

FLOWERS IN SEASON.—Mr. J. A. PACE, Aldenham Vicarage Gardens, sends a box of blooms of the beautiful *Iris unguiculosa* (stylus) of the blue type. The flowers are exceedingly beautiful, but they are of a delicate nature, and do not travel well by post. Messrs. Allwood Bros., Wivelsfield, Haywards Heath, send seedling Carnations of the perpetual-flowering type, raised at Wivelsfield, including Rosalind, a pretty yellow-ground, fancy variety flaked with red; Brilliant, another fancy, with white ground flaked with crimson; Highland Lassie, a picotee, the white petals edged with pink, and a white sport from May Day, a useful but small variety, very free in flowering, and suitable for market growers.

NEW SOURCES OF POTASH.—It is stated in the *American Florist* that a patent has been taken out recently by a Canadian for extracting potash from ordinary felspar. The process con-

sists in the heating of felspar with limestone and iron oxide to a temperature of about 2,200° F., and it is claimed that the partly fused mass thus produced is readily decomposed by weak acids. Another possible new source consists in the recovery of potash from the waste of distilleries where molasses are used in large quantities. It appears that some 106 tons of potash are wasted daily in the distilleries of the United States, and hence steps are being taken to recover the potash, which material, with the cessation of exports from Germany, is in great and increasing demand. What a wealth of opportunity the war is providing for a great man in charge of those of

ROGUE PEAS.—The Tare-like rogues which appear in certain races of the culinary Pea (*Pisum sativum*) were described recently in these pages (*Gard. Chron.*, September 4, 1915, p. 152), where an account of Prof. Bateson's investigations on their origin and behaviour may be found. In a recent note (see *Proceedings of the Royal Society*, Series B, Vol. 29), Prof. BATESON and Miss PILLER bring forward evidence to show that in those races which have the habit of producing occasional rogues, the latter are derived from seed formed in the apical pods, the lower pods giving rise to typical plants. Fuller evidence on this point will be available during the coming



FIG. 21 MR. REGINALD FARREY'S EXPLORATIONS: THE BELL-FLOWERED CLIMBERS IN THE COPPICES BETWEEN BRIDGEHEAD AND THE HILLS OF HEAVEN.

our departments of State concerned with the arts of peace, and how appallingly evident it is becoming that the hour has not produced the man. Otherwise this pressing problem of the discovery of new sources of potash, as well as many another problem, would be now receiving serious attention in this country.

KAPOK.—According to the Report of the Agricultural Department, St. Vincent, Kapok, so much in demand for life-vests and for upholstery, is obtained from the seed pods, not only of *Eriodendron anfractuosum*, but also from the Malabar Silk Cotton tree, *Bombax malabaricum*.

TRADE WITH CHINA.—We learn from the *Board of Trade Journal* that H.M. Commercial Attache at Peking (Mr. W. P. KIR, C.M.G.) reports that the Chinese Ministry of Agriculture and Commerce have recently established a Commercial and Industrial Commission whose object is the collection of statistics and the development

of trade in China, and that this Commission desires to receive copies of catalogues issued by United Kingdom manufacturers. United Kingdom manufacturers, and exporters of U.K. goods, who may be interested, should address catalogues and price lists of their goods to the Commercial and Industrial Commission, Ministry of Agriculture and Commerce, Peking.

LAWN-MAKING IN NORTHERN INDIA.—In the course of an article on the making of lawns in the tropics (see the *Tropical Agriculturist*, Ceylon, Vol. XLV., No. 6), the author, Mr. H. F. Macmillan, describes the method in use in northern India. A quantity of the Doob Grass (*Cynodon dactylon*) is pulled up by the roots, and chopped fairly fine and mixed with cowdung, mud and sand, made to a consistency of mortar. The paste is spread thinly over prepared ground, and in a short time a good lawn is produced. The method is, of course, practicable only in a dry climate.

SUPPLIES OF BASIC SLAG.—Owing to difficulties of transport and other causes, many have been unable to obtain a supply of this fertiliser. In these circumstances, the Board of Agriculture and Fisheries call attention to the fact that while there are certain advantages in applying basic slag to grass land early in the winter, the season for the operation may properly be regarded as extending to the end of March. Should the spring months be wet, even later applications may be effective next season.

CROPS IN ARGENTINA.—The production of Wheat, Oats and Linseed in Argentina in 1915-16 is estimated at 98,658,000 cwt., 21,554,000 cwt., and 20,137,000 cwt. respectively; or 9.3 per cent. and 31.8 per cent. more than the production in 1914-15 in the case of Wheat and Oats, and 9.1 per cent. less than last year's production in the case of Linseed.

RAINFALL IN 1915.—Although the crops in certain parts of the country suffered from a deficiency of rainfall in spring, and the drought continued in some districts until July, January and February and the latter months of the year were very wet, so that the rainfall of 1915 was generally equal to and in some cases above the average. The records from correspondents, which appear below, show that December was a month of unusual rainfall.

—Mr. James B. Allan states that the rainfall at Osberton Gardens, Worksop, for the year amounted to 26.48, or 3.48 inches more than in 1914. The heaviest fall occurred on November 12, when 1.61 inch was registered. September was the driest month, with only five rainy days and a fall of .74 inch. In December the rainfall amounted to 5 inches, being the wettest month in the year. There were 165 rainy days, or 12 less than in 1914. The hottest day was on June 8, when the thermometer registered 88° in the shade, being 1° lower than the hottest day in 1914; the coldest day was on November 14, when 16° of frost was registered.

—Mr. J. B. Lowe, who gives the records from Greenhill Gardens, Warminster, Wiltshire, states that the total rainfall in 1915 was 46.47 inches. Rain fell on 145 days. December, with 26 rainy days, was the wettest month, the total fall being 8.75 inches. In March only .99 inch was registered. The heaviest fall in 24 hours occurred on October 23, when 2.10 inches were registered. No rain fell from May 20 until June 26.

—At Dryham Park Gardens, Barnet, Mr. H. Jumper registered a total rainfall of 33.65 inches, being 5½ inches more than in 1914. July was the wettest month, with 5.66 inches. December was also very wet, the total being 5.37 inches, or 1½ inch less than in December, 1914. The maximum temperature was registered on June 8, the thermometer standing at 87°, while the coldest day was November 27, with 19° of frost. The heaviest daily falls

were on September 23 1.25, July 7 1.20, July 14 1.10 inch.

—At Bailrigg Gardens, Lancaster, the year's rainfall, 37.48 inches, was nearly 3½ inches less than 1914, and about 3 inches below the average. Mr. W. P. Roberts states that the remarkably small rainfall during September, October, and November had a serious effect on the underground water supplies of the district. Rain fell on 186 days.

—The rainfall at Blackdown House Gardens, Fernhurst, writes Mr. W. Brooks, was considerably above the average, being 41.51 inches. March and June were the driest months, both with .68 inch, and December the wettest with 8.31 inches. Rain fell on 152 days, the wettest day being October 31, when 1.56 inch was registered. Over an inch of rain fell on January 23, February 8, May 13 and 17, and October 31. The driest period was from May 21 until June 25, when only .6 inch fell on June 9. The maximum solar heat was 133° on June 8, and the highest temperature of the air in the screen was 78° on the same day; the minimum solar heat was 36° on January 27, and the minimum in the screen November 17, when 7° of frost was registered.

—At King Edward's School, Witley, Surrey, where the records are kept by the gardener, Mr. Henry Fenner, the rainfall amounted to 39.03 inches, spread over 201 days. On three occasions more than 1 inch of rain was registered in 24 hours. In December, 8.08 inches were recorded, whilst January, with 4.96 inches, and February, with 5.01 inches, were also very wet months. March and April were both very dry.

—The rainfall as recorded by Mr. W. Mann in the Observatory Gardens, Penllergaer, Swansea, was 43.18 inches, and there were 216 rainy days. This exceptionally large amount was spread over the months as follows:—January 5.25, February 7.96, March 1.10, April 2.30, May 2.33, June 2.27, July 4.91, August 2.81, September 1.64, October 3.77, November 4.23, December 9.56.

—Mr. J. G. Weston states that the outstanding meteorological features during 1915 at Eastwell Park Gardens were the two extremes of very dry weather in June, when only .14 inch of rain was registered, and the very wet period experienced in November and December, when 11.05 inches fell, the latter month being responsible for 7.28 inches. The spring drought began on May 19, and (except for slight showers) continued until July 7. March was unusually dry, with only .88 inch of rain. The total fall was 35.37 inches, spread over 155 rainy days. There were 23 wet days in January, 20 in February, and 25 in December.

—Mr. W. A. Cook, Ockford House Gardens, Surrey, registered 37.55 inches, this being spread over 151 days; February with 6.01 inches, and December with 6.55 inches, were the wettest months; and March .58 inch, and June .88 inch the two driest months. On October 31 the amount registered was 1.25 inch; whilst more than an inch of rain was recorded on two other occasions—January 22 and May 18.

—Mr. W. Priest, Eglinton Castle Gardens, Ayrshire, sends records which show that the rainfall was 33.09 inches on 139 days. In both February and December more than 5 inches were recorded, but only on one occasion—February 27—was there more than 1 inch in the 24 hours.

—Mr. J. Udale writes:—Rain fell on 25 days during December last, the total amount being 4.45 inches. The total amount registered for the month of December during the past nine years at the County Experimental Gardens, Droitwich, has been 32.49 inches, the driest December months being those in 1913 and

1908, with 1.04 inch and 1.84 inch respectively. Deducting the rainfall in December for those two years, there remain 29.61 inches for the month of December of the remaining seven years, or an average rainfall of 4.23 inches for each of those seven months. With regard to these winters of large rainfall an interesting and important question arises, viz., to what extent—if at all—is the fertility of the soil above flood-level reduced? And out of that arises the question: What would be the estimated value per acre of that loss of plant food, and of the loss per acre in the value of the crop grown thereon?

—Mr. George Laurence, of Manor House Gardens, Moretonhampstead, Devonshire, gives the rainfall for the year as 53.80 inches. Rain was recorded on 202 days. March was the driest month, when only .76 inch was registered, and December the wettest, with 13.75 inches.

—The rainfall in 1915 at Swanmore was 51.29 inches, which, Mr. Molyneux states, constituted a record for South Hants, Swanmore being within ten miles of the Solent in a straight line at an altitude of 395 feet. The previous heaviest fall was 46.11 inches in 1912, whilst in 1914 the record was 44.77 inches. Thirty years ago, writes Mr. Molyneux, the average for this part of Hampshire was 28 inches. The yearly rainfall since that period has gradually increased so much that during the past seven years it totals 39 inches. During December of last year there were but six dry days, the total fall being 10.21 inches. February was once more true to its character of "fill dyke" with a total of 7.56 inches. The greatest fall in one day was December 26, when 1.25 inch was registered. During the year rain fell on 148 days, thus the dry days amounted to 217. In December, 1914, rain fell on every day to the extent of 11.73 inches. For a continuity of recorded rainy days the close of the year 1914 and the early part of January gave 48 successive days of recorded rainfall, which is in this part a record. From a farming point of view the year just ended was favourable on the whole. During March rain fell on only seven days. April gave ten showery days. May and June between them produced only 5 inches of rain, this amount falling on 17 days. August, September, and October were distinctly favourable to harvest operations.

WAR ITEM.—Arrangements are now in progress for a further instalment of seeds for the farmers of France who have been ruined by the war. The Agricultural Relief of Allies Committee is preparing a consignment of seed Oats for distribution early next month, which will prove of great value in the Champagne district, where Oats form an important crop. Last year over 900 sacks of Wheat were given by British farmers through the medium of the committee. When the weather is more favourable the committee proposes to send another large quantity of poultry to the farms behind the firing line.

PUBLICATIONS RECEIVED.—*Monthly Leaflet of the Women's Farm and Garden Union*, January, 1916. (London: 45-6, Queen Anne's Chambers.) Price 2d.—*Journal of the Board of Agriculture*, No. 10, Vol. xxii, January, 1916. (London: H.M. Stationery Office. Price 4d.—*The Apple*, By Albert E. Wilkinson. (Boston, U.S.A., Ginn & Co.) Price 8s. 6d.—*Annual Report of the Board of Regents of the Smithsonian Institution*, 1914. (Washington: Government Printing Office.)—Special Leaflets Nos. 47, 49 and 50 (*The Use of Straw for Fodder, The Selection of Wheats for Spring Sowing, and Growing Two Corn Crops in Succession*). (London: Board of Agriculture and Fisheries, Whitehall Place.)—*Journal of Heredity*.—January, 1916. (American Genetic Association, Washington, D.C.)—*Experimental Farms*. Appendix to the Report of the Canadian Minister of Agriculture. (Ottawa: J. de L. Taché.)

POUR NOS AMIS FRANÇAIS ET BELGES.

CHRONIQUE SPÉCIALE (LXIII).

EN BELGIQUE.

Les Allemands viennent de nouveau de modifier le régime appliqué à la production de légumes. L'Obstzentrale fait maintenant des achats de Chicorée-Witloof pour l'exportation en Hollande. Le prix est de 30 centimes au kilo. Ces légumes sont expédiés à deux firmes, l'une à Rotterdam, l'autre à Amsterdam, où ils sont vendus à la commission pour le compte des Allemands. La première vente a eu lieu le 7 janvier et s'est faite à raison de 52 et 53 cents, au cours du change, plus de 1 fr. 50 le kilo. Si ce n'est là organiser l'exploitation des maraîchers brabançons, nous n'y comprenons rien.

Ces envois en Hollande ont pour but de contribuer au relèvement du cours coté pour le mark. Le produit de la vente est, en effet, destiné au paiement d'autres légumes que l'on expédie de Hollande en Allemagne.

Chez les viticulteurs, il reste peu de Raisin, plus cependant que l'année dernière à pareille époque. Les prix se sont relevés. Le beau Colman vaut 1 fr. 80 à 3 fr., le Muscat d'Alexandrie 3 à 5 fr. le kilo. Le charbon est disponible à des prix normaux, mais les tarifs de transport sont toujours doublés par les Allemands. Il y a beaucoup de misère dans la région, un grand nombre d'habitants étant occupés dans l'industrie du bâtiment de la capitale qui est naturellement peu active. Les vols se multiplient et lorsque des chargements de charbon arrivent dans les gares, ils sont immédiatement gardés, par crainte des maraudeurs.

LE MARCHÉ HORTICOLE EN HOLLANDE.

Dans des chroniques récentes, nous avons commenté la situation, en général brillante, des horticulteurs néerlandais. A Boskoop, où la nature du produit a entraîné une diminution dans le chiffre d'affaires, on a cependant encore expédié cet automne 250 wagons de plantes à destination du continent, en fait de l'Allemagne.

La demande de légumes reste très vive. Les achats considérables faits en culture réduisent néanmoins les quantités amenées aux marchés. Des Choux rouges s'y sont vendus à des prix dépassant 16 francs les 100 kilos. Les Choux blancs de qualité, dont les cours sont légèrement inférieurs, se vendaient 14 à 16 francs. Si l'on considère le rendement énorme de certains choux, ces prix doivent être très rémunérateurs, même en tenant compte d'un fort pour cent de qualité inférieure. Les Choux-fleurs, 1^{er} choix, qui grâce à la température douce sont toujours disponibles, valent 10 à 20 fr. le 100. Le total des ventes effectuées à la Coopérative maraîchère de Bovenkarspel dépasse 6 millions de francs. Ce chiffre marque une augmentation de 2.500.000 francs pour l'année et n'a jamais été atteint auparavant. C'est probablement aussi le plus élevé qui ait été réalisé jusqu'à présent dans une coopérative de maraîchers.

Les fleuristes d'Aalsmeer ont fait une bonne campagne de Noël. Un nombre assez considérable de Lilas ont mal noué, mais les prix ont certains jours atteint des niveaux très élevés oscillant entre 0 fr. 40 et 1 fr. la branche, et l'approvisionnement de la spécialité d'Aalsmeer était important. Les beaux Chrysanthèmes se sont également bien vendus, de 0 fr. 40 à 0 fr. 90 pièce, les Roses 0 fr. 30 à 0 fr. 60 pièce. On y a forcé beaucoup de Prunus; les Boules de Neige, au contraire ont perdu de leur importance à cause de la durée du forçage.

Après les fêtes de Noël, on remarque une baisse générale sur les fleurs, mais les cours ne donnent pas sujet à des plaintes.

Cette année, la fermeture de la frontière belge a amené les viticulteurs du Westland à conserver leur Raisin jusqu'à la dernière limite et pour la première fois, du Black Alicante a été disponible jusqu'au Nouvel an. Les prix étaient excellents. Alors que d'ordinaire les derniers envois font 1 fr. 60 à 2 fr. le kilo, ils ont bientôt atteint cette saison 3 à 4 fr., pour finir à près de 8 francs pour quelques beaux lots. Cette situation est sans précédent.

Il est à remarquer que tous ces cours sont établis sans tenir compte du change. Les achats se faisant surtout pour la consommation allemande, celle-ci a dû majorer ses paiements d'au moins 25 pour cent.

NOUVELLES DIVERSES.

NOUVELLES DE LA GUERRE.—L'appel de la classe 1917 a réduit l'effectif de l'Ecole Nationale d'Horticulture de Versailles à 54 élèves. Trois autres anciens élèves viennent de tomber au champ d'honneur. Le total des pertes de l'Ecole est ainsi porté à 59. Le lieutenant Jean de Vilmorin qui, ainsi que nous l'avons annoncé, fut blessé, a été nommé au grade de chevalier de la Légion d'honneur.

LES FRUITS D'OUTRE-MER À LONDRES.—Les envois de Pommes du Canada, des Etats-Unis et d'Australie sont partiellement vendus dans la salle des enchères de Covent Garden. On sait qu'au cours des dernières années des efforts ont été faits pour vendre aux docks, de façon à supprimer le charriage au marché et la commission du vendeur. Une crise assez aigue avait même surgi lorsque les vendeurs à Covent Garden expulsaient de leurs locaux toute personne non pourvue de carte d'admission, parce qu'ils croyaient rendre difficile le trafic aux docks en empêchant les agents de se rendre compte des cours faits au marché et même d'y faire des offres directes aux acheteurs.

La question a été de nouveau posée et les commissionnaires de Covent Garden font valoir que le marché central présente des avantages pour la livraison, parce que les acheteurs de moyenne importance peuvent y recevoir leurs fruits par un service organisé entraînant des frais minimes, ce qui n'est pas le cas aux docks, où il faudrait un camion pour un achat de Pommes seulement. D'autre part le transport des docks à Covent Garden se faisant par fortes quantités, les frais supplémentaires sont très réduits.

LES FRUITS DU CAP.—Le Nouvel an a vu les premiers arrivages de Pêches, Abricots et Prunes du Cap au marché de Londres. Les envois sont en bonne condition mais de qualité moyenne. C'est l'habitude pour les tout premiers fruits. On s'attend bientôt à des arrivages plus considérables, mais la restriction des transports en cabine réfrigérée fait prévoir qu'ils n'atteindront pas l'importance des dernières années.

LES HORTICULTEURS ALLEMANDS AUX PRISES AVEC LA SUISSE.—Nous avons fait allusion à la campagne menée en Allemagne contre l'emploi de fleurs françaises et d'autres. On s'y prend dans certains milieux aux Suisses qui servent d'intermédiaires pour l'importation de ces fleurs. Il est assez curieux des lors que des Allemands critiquent l'attitude de ces mêmes Suisses quand ils se refusent à favoriser le transit d'autres produits provenant des pays alliés et cela bien que cette attitude leur soit imposée par les conditions de l'exportation vers leur propre pays. Pour les semences du Midi de la France et de

l'Italie par exemple, les Suisses devraient mieux montrer leur neutralité et assurer l'approvisionnement de l'Allemagne, parce que "les conditions climatiques rendent la production de certaines espèces impossible dans ce pays, et qu'actuellement il n'y a d'autres fournisseurs que ceux des pays alliés." "L'indignation" est d'autant plus vive que les coupables sont des Suisses. Allemands auxquels la langue et l'origine imposent la sympathie pour leurs frères du Nord. Il se fait que sous les auspices de la "Société suisse de Surveillance économique" on a constitué à Zurich, un syndicat de marchands de semences horticoles, qui se porte garant de l'emploi en Suisse même, des produits dont l'envoi est autorisé par les gouvernements alliés. Les adhérents au syndicat ont à se prêter à toutes les mesures de contrôle et s'engagent à éviter l'exportation des semences qui leur ont été fournies. On suggère en Allemagne une pression diplomatique sur le gouvernement suisse pour mettre fin à ces abus... surtout en ce qui concerne les produits originaires de pays non en guerre avec l'Allemagne. On voudrait sans doute que les horticulteurs suisses soient obligés à considérer comme nuls et non avenue leurs engagements vis à vis des alliés.

LES VIGNOBLES FRANÇAIS.—Les vignerons font des doléances au sujet de l'état dans lequel ils doivent laisser leurs plantations. Le temps pluvieux et le manque de bras les mettent dans l'impossibilité d'effectuer les travaux d'entretien. Déjà l'année dernière beaucoup de vignobles ne purent être convenablement traités aux fongicides et les maladies cryptogamiques sévirent avec intensité. On craint que sauf mesures énergiques la situation ne s'empire au cours de la saison prochaine.

LES LÉGUMES À PARIS.—"L'Echo de Paris" continue sa campagne contre les intermédiaires qui poussent les denrées alimentaires et notamment les légumes à des prix exorbitants, nullement en rapport avec les cours dans les centres de production. Ce serait particulièrement le cas pour la Choucroute. Avant la guerre, le prix de revient, achat des Choux compris, était de 12 francs les 100 kilos, le prix de vente 17 francs. Actuellement le prix de revient ne serait que de 14 fr. 25 et le prix de vente a néanmoins passé à 60 et 70 francs. On demande conséquemment que la préfecture de police range la Choucroute parmi les produits soumis à la taxe.

KORT OVERZICHT VOOR DE VLAMINGEN.

Na het verbod van uitvoer toepasselijk op het Belgisch Witloof, brengen de Duitschers zelf een zekere hoeveelheid dezer groente naar Holland. Ze betalen 30 centiemen per kilo en verkoopen 1 fr. 30. De winst moet dienen om andere groenten voor Duitschland aan te koopen.

In Holland worden de koolen opnieuw zeer duur verkocht, en de teelt moet dit jaar loonend geweest zijn. Druiven waren beschikbaar tot met Nieuwjaar; de laatste golden tot 8 frank per kilo, dank aan den niet aanvoer van Belgische waar.

In de bloembrei van Aalsmeer is de teelt ook nog goed, alhoewel na de kerstnachten een eere prijsdaling intrad.

Door de Belgengroenten worden verzendingen van zand voor groenten en bloemen naar Zwitserland toegestaan op voorwaarde—heel billijk—dat het niet naar Duitschland gevoerd worde. Sommige Duitse kweekers zijn erg geworden omdat de Zwitsers zich daaraan onderwerpen.

FRUIT REGISTER.

APPLE ORLEANS REINETTE.

It is a curious fact that this excellent Apple, which in my opinion would have to be included in the six best dessert varieties, should have taken over 100 years to become known in this country. The first record of it seems to be in Zink's edition of Knoop's *Pomologia*, published in Nurnberg in 1760.

It is there described as Orleans Reinette, and said to be the largest and best of the Reinettes. Whether it came in the first place from Orleans it is now impossible to say, but as that town has for so long been an important nursery centre it may only have been distributed thence. The country in which it was mostly grown was Belgium, especially around the town of Joidoigne, where it was known as Court Pendu de Tournai. Most of the great pomologists of the last century described and spoke of it in the highest terms. Diel, Bivort, Hennan, Leroy, and others may be referred to for full details. The best coloured plate may be found in the *Nederlandsche Boomgaard* of Ottolander (Boskoop, 1868), No. 18, under the name of Wijker Pippin. The mention of this further synonym



FIG. 22.—DESSERT APPLE ORLEANS REINETTE

brings in the possibility that the Orleans Reinette may have been confused in former times with the Golden Reinette, but the matter is too lengthy for treatment here. Its recent introduction into this country seems generally to have been brought about by its inclusion as a rogue in Blenheim Pippin trees imported from the Continent. From its resemblance in flavour to Ribston Pippin it was provisionally named Winter Ribston, but this must now be considered as a synonym. In general appearance it might be taken for a large Court Pendu Plat, and the growth comes between this variety and Blenheim Pippin. Having now grown it for twenty years I can say confidently that it is a good and regular bearer, and has only one fault, a slight tendency to canker. This, however, is not greater than in such varieties as Ribston Pippin or Blenheim Pippin.

Being ready for consumption at Christmas, and keeping as it does till March, it has no serious rival but Claygate Pearmain. When brought before the R.H.S. Fruit Committee last winter the variety received an unanimous vote of the Award of Merit, and I feel confident that it will not be many years before it will be found in all gardens where first-class dessert fruits are appreciated. *Edward A. Buxford*.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

APHIS ATTACKS ON FRUIT TREES.—Can *Southern Grower* or any other reader suggest an explanation of the following: One of my plantations of bush Apple trees, four years planted, is divided down the middle by a 20-foot roadway; on one side the ground between the trees is planted with Gooseberries, on the other with Strawberries. The Apple trees on the latter ground completely escaped aphis attack last summer, while those interplanted with Gooseberries suffered very badly. The difference was too marked to be accidental. I noticed the same thing in the summer of 1914, but it was less marked, as aphides were then fewer. The Apple trees on either side are of the same varieties, and they all received their first spring spraying at the same time; those on the Strawberry ground were not sprayed again, and made splendid growth, but the others are badly crippled, notwithstanding continued washing. *H. A. Whiffen*.

R.H.S. BEAN TRIALS, 1914.—My very snave irony on the subject of the meaning of "Mange-tout" evidently requires re-tempering to a harder grade. Vilmoir, who may be well considered to be an adequate authority, is perfectly explicit on the subject; the 1904 edition, p. 285, of *Les Plantes Potagères* shows that "Les cosses et les

grains du Haricot varient beaucoup d'une variété à l'autre sous le rapport de la forme, de la couleur et de la consistance; nous décrirons donc chaque variété séparément, nous contentant de faire observer ici qu'on les devise, à ce point de vue, en: *Haricots à écosser* ou à *parchemin*, dont la cosse devient très dure et coriace à la maturité, et *Haricots mangetouts* ou *sans parchemin*, dont la cosse ne prend pas, même en séchant, cette texture membraneuse." [The italics are in the original.] Verrier (*Culture Potagère*, 1913, p. 240, § 487) expresses himself in almost identical words. The Herefordshire yokel "considers" that *must* means the pomace or Apple refuse from the cider mill, but his practice does not alter the fact that the *must* is the juice. When a word has a well-established significance any wilful alteration of meaning is surely a retrogression. Can *W. L. L.* name a variety of Mange tout Pea which is "sans fil" or stringless? I should like to grow such an one. With regard to colour of seed when cooked I have not seen much difference between *H. flageolet rouge*, *Golden Waxpod* (Sutton), and what might be described as a "semi-mangetout," the Canadian Wonder (improved). Two Mange tout Beans that I grow can be boiled whole (after stringing) and eaten when the seeds are practically ripe. I will let *W. L. L.* have a few seeds if he cares to try them, and will send a small subscription for the *Croix Rouge Française*. *H. E. D.*

GLADIOLUS HYBRIDS (see p. 34).—Some of the parentages given by Mr. Bliss are open to doubt; others incorrect. If we may trust Donald Beaton, who claimed to have an intimate knowledge of the hybridising operations of Dean Herbert and others, *G. ramosus* is the result of a cross between *G. cardinalis* and *G. oppositifolius*, and the best of many such (*Cottage Gardener*, Vol. 1). Victor Lemoine was of the opinion that *G. psittacinus* and *G. cardinalis* produced *G. gandavensis*. He did not deny that other sorts cultivated by Beddinghaus might have interposed. "However that may be," he remarks in *Les Gladiols*, "the result obtained disclosed that origin." At an early stage Senehet is said to have introduced the blood of *G. blandus* and *G. ramosus* into his seedlings of the *gandavensis* section. When Lemoine made his first crosses with *G. purpureo-auratus* he selected as the other parents the finest varieties obtainable of *gandavensis*, three seedlings resulting, of which two were preserved, the one *G. Lemoinei* and the other the well-known Marie Lemoine. He secured violets and blues from the offspring of these and of *gandavensis* varieties—Emile Gallé, the earliest, in 1887. He was puzzled to know whence the colour was derived. He could understand how pure yellows should have come; what was incomprehensible was the production of violet-blue flowers, and he had no assurance as to which of the two ancestors it was due, "as unknown in the *gandavensis* section, as it is difficult to detect in the small yellow flower of *purpureo-auratus*." So wherever the author got his information that Lemoine used *G. papilio* "in combination with *G. Lemoinei*," Lemoine himself gives a different version of the genesis of the blue Gladiolus. "1862" is probably a misprint. The year that Lemoine made the first attempt to hybridise *G. Saundersii* was in 1883, the crosses being effected between that species and the best of the Lemoinei varieties. President Carnot was one of the best of the early seedlings, but they, though large, were a coarse lot, and Max Leichtlin hit a finer vein in his cross with *gandavensis* varieties now well known as the Childsii section, though the flowers are much smaller. I am at present cleaning the corms of Gladiolus preparatory to planting, and it is quite easy to determine from them whence seedlings were derived. Some are exactly like *G. Saundersii*, others small and neat like *G. purpureo-auratus*, and others have the *G. gandavensis* form, but improved in quality, due no doubt to the Childsii blood. Some which flowered the first time last year are peculiar in the number of corms produced—three, four, five and six being arranged around the old corm in the form of a half circle. There is the curious circumstance, too, of many corms producing few or no bulbils, while in others similar in other respects there are dozens. One thing common to all is that they produce good spikes of flowers. We get seeds here only in fine seasons, but in southern latitudes there should be no difficulty in securing abundance of seeds annually and producing quantities of beautiful flowers from seedlings. It may be interesting to add that Dean Herbert's seedling Gladiolus—twenty-four varieties—were in the hands of a Mr. Tate, a nurseryman of Sloane Street, in 1830, but Gladioli were hybridised long previous to that date. *R. P. Brotherton, Tynninghame Gardens, Prestonkirk*.

LIME-WASH FOR FRUIT-TREES.—I am obliged to several correspondents for suggestions on this subject on p. 38. In reply to Mr. Ashridge, I should like to know the chemical composition of the refuse from acetylene-gas tanks before using it on fruit trees. If it is difficult to get this material off glass, it must be valuable for making lime stick on trees. Dr. H. E. Durham mentions lime as strongly adherent. I used Buxton lime, which is made from limestone. Blue has lime is a typically hydraulic lime, and while it is more adherent than ordinary lime, it is presumably less caustic—a disadvantage for spraying. As to the first lime-washing sticking on trees, my failure in 1914 was a case of washing with lime only for the first time. I had used lime-sulphur before

* Quoi qu'il en soit, le résultat qu'il en obtint décelait cette origine.

on most trees, but not on some young ones. Yet nearly all the lime was washed off in a week from trees which were perfectly white all over a few hours after the spraying, rain having been frequent. Double spraying is out of the question with me. It is bad enough to spray all my orchards once at a time when every man should be hoeing. *M.*'s reference to Buxton is answered above, and I used the wash immediately after the slacking, tub by tub. *M. N.* suggests milk or borax. The former would be expensive, and it seems to me unlikely that it would materially add to the adherent capacity of the lime on trees, whatever it may do on turf. Borax is worth trying. It would never do to leave the slacked lime overnight. It needs to be applied before it cools. *A Southern Grower.*

LUCERNE IN ORCHARDS.—The difficulties mentioned by *E. M.* (p. 38) had occurred to me; but it remains to be proved whether the cut first-crop would impair the growth of the second or not. If it did, I should cut the first cut off for my horses, and I think that the last cut would do no harm after the growing season was past. I cut a piece I have for horses four times in a season, but always before it is in blossom, and it is never 2 feet high. I should wish to do with two cuttings in an orchard. *A Southern Grower.*

STERILISING SOIL (see pp. 10, 26).—In reply to Mr. C. E. Pearson, it is essential that the soil should be covered with sacks or other suitable material to prevent the escape of moisture and heat. Only the soil in close contact with the floor is "dried out" to a thickness of half to one inch, the remainder keeps moist through the process. The growth of plants in sterilised soil, whether it has been treated by steam or dry heat, is slower than in non-treated soil for a short period, and it is advisable not to use the soil immediately after it has been sterilised. *P. Aquinas.*

THE FLORIST'S GLADIOLUS.

(Continued from p. 31.)

In order to understand how the change takes place and all that it involves, a brief further examination of the Normal flower is necessary. The flower of the Gladiolus is epigynous (with the perianth above the ovary), and it is sessile, the trilobular seed capsule springing from, and standing erect on, a little shoulder projecting from the side of the stem. This seed capsule is disposed in relation to the stem so that one of the partitions is adjacent to the stem, as shown in the diagrams (fig. 23). As it is immovable, this disposition serves as a datum for determining any changes of position of the parts of the flower in the Normal and Semi-pelariate forms when compared. The three petals of the outer series (or rather those sections of the circumference of the tube which form the continuation of the base of these petals) are attached above the compartments of the seed capsule, and the three inner series petals above the partitions. Observation of the Normal flower shows that the petal (A) above the partition which is adjacent to the stem is the inner one of the two lower side blotched petals. A reference to the diagrams will show that if the flower was simply to bend forward from the erect position so as to bring it facing front and horizontal, the lowest point would lie half-way between the petals (B) and (F)—the other blotched inner series petal and the lower of the three outer series petals. But actually in the Normal flower, petal (F) is always the lowest, so that together with the two other blotched petals on either side of it a horizontal platform is provided for the alighting insect. In order to effect this position it is necessary, therefore, for the tube to be twisted through 30° (1/12th of a revolution). And that this twist is always present and is plainly visible in the Normal flowers of a *front-facing* spike.

This being established, it is now possible to

determine which of these two petals is the transformed one in the semi-pelariate flowers, losing its characteristic markings, and developing to the size and form of the outer series petals. It will be found that this transformed petal is practically always the inner one—the one adjacent to the stem. Exceptions may be found. In my own collection of seedlings the exceptions—some of which are simply freaks—amount to less than 10 per cent. In an in-bred strain, especially when carefully selected towards the production of perfect exhibition spikes, the exceptions would probably be nil, or less than one per cent.

On referring to the diagrams again, it will be seen that there is a very obvious reason for this. For if it were the *outer* blotched petal which is transformed, then, in order to adjust itself so that the remaining (adjacent) blotched petal should be the lowest, the whole flower would have to turn through an angle of 90°—in the same direction as the Normal flower does, or 60° more. Whereas the other blotched petal needs only a twist of the flower of 30° to assume the

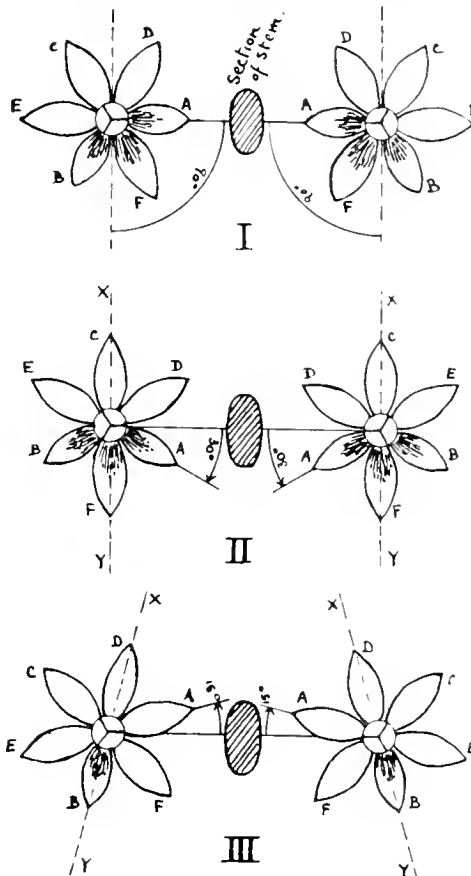


FIG. 23. FLOWER DEVELOPMENT IN GLADIOLUS.

I. The flower in bud.

II. A fully opened flower facing front. X-Y, axis of facing.

III. A semi-pelariate flower facing front (15° outwards) and being twisted also 15° X-Y, axis of facing.

Corresponding petals with the same letter in each figure. The position of the seed capsule (the central circle) remains the same in all figures.

same position, though it is in a reverse direction. The tubes of these semi-pelariate flowers do, in fact, often show a slight twist in a reverse direction to that seen in Normal flowers, but not nearly so much as would be expected, and often none at all is visible. The reason of this may be partly that it is a reversal of the normal twist, but chiefly it is because these semi-pelariate flowers do not face so much "front" as the normal flowers (of the same variety), and it will be seen that this facing somewhat outwards, or "opposite," would have the same effect in bringing this outer blotched petal to the lowest position when the flower bends over, so as to face semi-horizontally, as would the twist-

ing of the tube. Lastly, owing to the change in position of the flower, each petal is in a different functional position to that which it occupied in the Normal flower, and in consequence all the petals undergo changes, in varying degrees, of form and curvature. To sum up: what is so remarkable is the successful functional co-ordination of so many parts and movements, in such intricate interdependence, of the transformed flower—the alteration in the form, size, and colouring of the petals, in the amount and direction of the bending and twisting of the tube, and of the twisting and bending of the stamens and stigma branches, involving most complex readjustments and reversals—all directed towards the fulfilment of the function of fertilisation to the best advantage. And all this co-ordination is displayed, not as the result of a habit impressed by thousands of years of evolution, but to meet an emergency, an altogether new situation, and one, moreover, that changes from year to year, which varies from flower to flower on the same spike, and which is apparently only finally determined within the space of a few days.

I have given these facts from the point of view of the florist, observing things only as he finds them, without pretending to a full understanding or attempting an explanation, but it seems that there is here a promising field for the student of genetics. For the phenomena displayed, though they are undoubtedly connected, and closely connected with the phenomena of heredity, are yet surely different, and a fuller understanding of them might perhaps throw some light on some of those problems of heredity which at present are obscure. *A. J. Bliss.*

SOCIETIES.

ROYAL HORTICULTURAL. Scientific Committee.

JANUARY 11. *Present:* Mr. E. A. Bowles, M.A. (in the chair), Messrs. J. Fraser, A. Worsley, W. Bateson, J. Allard, W. Hales, E. M. Holmes, W. C. Worsdell, W. Fawcett, and F. J. Chittenden (hon. sec.).

Hybrid Mint.—Mr. J. Fraser showed a specimen of a Mint which he had collected near Aberdeen, and which he regarded as a possible hybrid between *Mentha aquatica* and *M. piperita*. It was the only specimen growing in a quantity of the latter plant, and had much of the habit of their species, but was very hairy. He thought it had probably inherited its hairiness from *M. aquatica*. It was different from *M. pubescens* (*M. reptans* as it is called on the Continent).

Brodiaea Sellowiana.—Mr. A. Worsley showed a flower of this pretty little species of *Brodiaea* which he had had growing in a house for many years, but which died out of doors. It does not appear to be hardy.

Massonia pustulata.—Mr. Bowles showed a specimen of this interesting plant from Mr. Elwes. A Botanical Certificate was awarded to it when last shown in 1906. He also showed a remarkable flower of *Galanthus ellicicus*, much larger and finer than usual, from the same source. It had appeared among imported bulbs.

"Sporting" of Bouvardia.—Mr. W. Bateson showed a sport from the pale pinkish form of *Bouvardia*, known as "Bridesmaid," like "Hogarth" in every way, i.e., of a red colour. It had occurred among plants raised from cuttings of the former. He suggested that the probable explanation of the sporting was that "Bridesmaid" was a chimera, and that as the buds on the root-cuttings were produced from the central tissues of the root only, the outer covering present in "Bridesmaid" was lacking in the plants propagated from it. Such sporting in root-cuttings has been recorded several times, especially some years ago, and the Committee would be glad to learn of other similar cases.

Fasciated Daphne Laureola.—Mr. C. H. Curtis sent very remarkable shoots of *Daphne Laureola* which had occurred in the garden at Scrathy Hall, Yarmouth. The stem was flattened and

spread out in a fan-like manner, so that many hundreds of small shoots were produced in a cockscomb-like termination to the branches.

Fasciated Primula malacoides.—Mr. Curtis also sent from his own garden an inflorescence of *Primula malacoides* with very numerous flowers in the whorls, from the first of which several branches bearing many-flowered whorls had arisen.

Gall on Salix babylonica.—Mr. Gingell sent a gall, similar to those which occurred on Willows in Essex in 1906, and were then shown before the Scientific Committee, cut from *Salix babylonica* in Dulwich Park. The gall consists of innumerable short shoots arising close together so as to form a dense mass of thin growths, which in winter look almost like derelict birds' nests hanging in the trees. It is probably caused by a mite, and has spread rapidly all over the London district.

SCOTTISH HORTICULTURAL.

JANUARY 18.—At the annual meeting, on the above date, the Council issued the statement of accounts for the year ending December 31. By reason of a loss of £154 on the Chrysanthemum Show and the adverse position caused by the war, the funds of the association are not as satisfactory as usual. The Chrysanthemum Show accounts exhibit an income, including the sale of plants for the War Horticultural Relief Fund (£94 3s.), amounting to £404 6s. 2d., and an expenditure, including the £94 3s. paid to the Relief Fund Treasurer, of £553 8s. 5d. The revenue account exhibits an income of £201 8s. 1d., including £150 18s. 6d. from annual subscriptions, and an expenditure of £365 13s. 6d., including the loss on the show, the total deficit being £165 5s. 5d. The Horticultural Institution Fund shows £1,670 18s. 6d. to the credit of the fund. The Benevolent Fund account, from which a small sum had been granted, amounted to £21 6s. 4d. The accounts were duly audited by Messrs. Robertson and Carphin, C.A.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 6.—*Committee present*: The Rev. J. Crombholme (in the chair), Messrs. R. Ashworth, J. Cypher, J. Evans, P. Foster, A. R. Handley, A. Hammer, D. McLeod, W. Shackleton, S. Swift, H. Thorp and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Cypripedium Cavellii var. *Mrs. S. Gratrix* (*Euryades* × *Earl of Tankerville*), a noble flower, with round dorsal heavily spotted and margined with white. Shown by S. GRATRIX, Esq.

Brassia Cattleya Doris (*C. Mendelii* × *B. C. The Baron*), a large flower with lip well fringed and broad brilliant lines of colour in the throat, from P. SMITH, Esq.

AWARDS OF MERIT

Cypripedium Wm. Ross (*Hitchinsian* × *Melo*), *C. Lord Wolmer*, *Worley's* var. (*Hera* × *Leucum*), and *C. viridissimum Carter Place* var. *aureum* × *villosum uniflorum*; all shown by TOM WORSLEY, Esq.

Odontoglossum crispum Janua, from R. ASHWORTH, Esq.

Cypripedium Nydia var. *Gratrixae* (*Niobe* × *Leucum*), from S. GRATRIX, Esq.

Odontioda Diana Holden House var., from P. SMITH, Esq.

AWARD OF APPRECIATION.

Odontoglossum Anzac (unknown parentage), from P. SMITH, Esq.

CULTURAL CERTIFICATE.

To Mr. E. ROGERS (gr. to O. O. Wrigley, Esq.) for *Laelia Gouldiana* and *Calanthes* in variety.

GROUPS.

The following medals were awarded for collections:

Large Silver Medal to R. ASHWORTH, Esq., Newsham, (gr. Mr. W. Gilden), for a miscel-

laneous group containing *Odontoglossums* Josephine, Aviator, Rufus, amabile, Milky Way and eximium *Excelsis*; *Odontioda Charlesworthii*; *Cypripedium Minos Youngii*, C. Victor Hugo, C. Beekmannii, C. The Premier, C. Rossendale, C. Alcibiades var. Thunderer; *Cattleya Blackii*, C. Trianae albens; *Laelio-Cattleya Charlesworthii*; *Miltonia Bleuana*, and others. S. GRATRIX, Esq., Whalley Range (gr. Mr. W. W. Field), for a group composed of a large number of well-blotched *Odontoglossum crispum* and hybrids, *Vanda Sanderiana*, *Lycaste Skinneri* alba and others. A. HAMMER, Esq., Chester (gr. Mr. B. Wilson), for a group composed principally of *Cypripedium insigne*, *Odontoglossum ardentissimum*, O. Pescatorei and O. crispum; *Epidendrum vitellinum autumnale* and *Laelia Gouldiana*. Messrs. CYRIL AND SONS, Cheltenham, for *Cypripedium Minos Youngii*, C. Thompsonii, C. Actaeus Sybil, C. Langleyense, *Euryades splendens*, C. *Leucum Gratrixae*, C. *Clinkberryanum* and *Chardwar* var.; *Laelia anceps Crawshayana*, *Dendrobium Phalaenopsis splendens*, *Phaio-Cymbidium Chardwarensis*; *Odontioda Schroderae* and *Calanthe Harrisii*.

Silver Medal to TOM WORSLEY, Esq., Haslingden (gr. Mr. T. Wood), for a group of choice *Cypripediums*.

Bronze Medals to F. A. HINDLEY, Esq., Bedford and Messrs. A. J. KEELING AND SONS, Bradford.

NATIONAL CHRYSANTHEMUM.

JANUARY 17.—A meeting of the executive committee was held on the above date at Carr's Restaurant, Strand. Mr. Thomas Bevan presided. The draft annual report and financial statement were submitted for approval before being presented at the annual meeting, which will be held on February 7. The society's *Transactions*, which have been suspended, will, it is hoped, be resumed and the records for 1914-1915 incorporated in one volume. The society's financial position is satisfactory, and all accounts to the end of 1915 have been settled.

ROYAL CALEDONIAN HORTICULTURAL.

JANUARY 12.—The annual meeting of the above society was held in Dowell's Rooms, Edinburgh. The chair was occupied by Mr. J. D. Adair. The annual report, which was considered satisfactory in view of the present war conditions, was adopted. With reference to the proposed abandonment of the autumn show, it was agreed to leave the question in the hands of the Council. Officers and members of Council were elected as follows:—President, Lord Elphinstone; vice-president, Mr. R. C. Cowan; and members of Council, Messrs. James Whytock, D. King and William H. Thomson.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JANUARY 10.—The monthly meeting of this society was held at the R.H.S. Hall, on Monday, the 10th inst., Mr. C. H. Curtis in the chair. Three new members were elected. Three members were allowed to withdraw double the amount of interest, amounting to £9 18s. 6d.; one member over 70 withdrew from his deposit account the sum of £55 7s., and one lapsed member was allowed to withdraw £27 19s. 5d. The sum of £31 18s. 10d. was passed for payment to the nominee of a deceased member. The ordinary sick pay for the month amounted to £83 7s. 9d., State section £34 15s., maternity benefits £12, quarterly payments to chronic sick £13 15s.

GARDENING APPOINTMENTS.

Mr. W. A. COOK, Oakford House Gardens, Godalming, Surrey, as Gardener to the Hon. ARTHUR J. DUFF, Abbott's Wood, Prior's Corner, Godalming.

Mr. ALEXANDER INNES, for the past three years Nursery Manager to Messrs. D. and W. CROLL, Dalhousie Nurseries, Broughty Ferry, and previously for 19 years Gardener to W. D. GRAHAM MENZIES, Esq., Hallyburton, Forfarshire, as Superintendent of Dean Cemetery, Edinburgh.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

ANNUAL ELECTION OF PENSIONERS.

JANUARY 20.—The Seventy-sixth Annual Meeting of the Gardeners' Royal Benevolent Institution took place on Thursday last at Simpson's Restaurant, Strand. Sir Harry Veitch, who has now filled the office of treasurer for thirty consecutive years, presided over a moderate attendance of subscribers. The minutes of the last meeting and report of the Executive Committee were read by the secretary, Mr. George J. Ingram, who this year completes his jubilee in that office.

The main fact for gardeners in the Committee's report is contained in the second paragraph, where it is stated with regret that the Institution has experienced a falling off in income. There are obvious reasons for a diminution in revenue at the present time, when charitable people of all ranks have innumerable calls upon their purse and time, but there is little doubt that the inevitable abandonment of the Festival Dinner, which has been held without intermission since 1843, has had its effect. These circumstances should spur gardeners to redouble their efforts to raise amongst themselves additional sums in support of this most excellent charity. The need is surely urgent, for the Committee on its report is only able to recommend the election of 13 annuitants from an approved list of 61 candidates.

RESULT OF ELECTION.

	Age.	No. of Votes
Pope, William	70	7,433
Heath, Thomas	65	4,657
Harris, Elizabeth	79	4,422
Bardney, Ann B.	61	4,165
Langdon, Jane	76	4,163
Bartlett, Mary A.	67	4,145
Churchyard, James	64	4,120
Ireland, William	76	3,885
Nicklen, Henry	68	3,800
Snell, George	80	3,798
Lawford, Ann M.	75	3,743
Hebblethwaite, Mary A.	73	3,624
Poole, Emily	66	3,584
Dove, James	65	3,487
Brooks, William	72	3,392
McLean, George	66	3,205
Williams, William	68	3,036
Moore, Frederick	81	3,035

After the declaration of the poll, Mr. Arthur W. Sutton announced his desire to give a sum of £20 to provide one year's pension for one of the unsuccessful candidates. Sir Harry Veitch agreed to provide the money for one year's pension for Sarah M. Cannon, a candidate in her 80th year, who has sought election on seven occasions. Another candidate, Jane G. Farquhar, was placed on the funds for one year owing to a gift by Mr. Geo. Monro. A fourth additional candidate, viz., George Howe, was added to the list of pensioners by a vote of the meeting, the reason being that this candidate polled only one vote fewer than were obtained by the eighteenth candidate.

Obituary.

ALEXANDER MACKINNON.—We greatly regret to announce the death of Mr. Alexander Mackinnon, gardener to the Right Hon. the Earl of Mansfield, Scone Palace, Perthshire, on the 14th inst. Mr. Mackinnon, who was 68 years of age, was one of the best-known Scottish gardeners. He was gardener at Scone for a number of years, where he enjoyed the confidence of successive Earls of Mansfield. He was a prominent member of the Royal Caledonian Society, and one of the founders of the Scottish Horticultural Association.

WYNDHAM FITZHERBERT.—We regret to record the death of Mr. Wyndham Fitzherbert, of Kingswear, Devonshire. Mr. Fitzherbert frequently contributed notes to these columns on plants in the south-west.

MARKETS.

COVENT GARDEN, January 19.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—E.N.S.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Azalea, white, per doz. bun.	3 6-4 0	Pelargonium, per doz. bunches, double scarlet	8 0-10 0
Camellias, white, per doz.	1 9-2 0	Richardias (Arums), per doz.	2 6-3 0
Carnations, per doz. blooms, best American varieties	1 6-2 6	Roses: per dozen blooms—	
—smaller, per doz. bunches	—	—Duchess of Wellington	—
—Carola (crimson), extra large	3 0-3 6	—Lady Hillingdon	—
—Malmesbury, per dozen blooms	—	—Liberty	—
—pink	10 0-15 0	—Madame A. Chateau	4 0-6 0
Daffodils, per doz. bunches	4 0-6 0	—Melody	—
Eucharis, per doz.	2 0-2 6	—Mrs. Russell	—
Freesia, white, per doz. bun.	2 0-2 6	—My Maryland	—
Gardenias, per box of 15 and 18 blooms	7 0-9 0	—Niphetos	3 0-3 6
Hyacinth, Roman, per doz. spikes	0 9-1 0	—Principe Bulgare	—
Lapageria, per doz. blooms	—	—Richmond	4 0-5 0
Lilac, white, per doz. sprays	4 0-5 0	—Sunburst	—
Lilium longiflorum, per doz. long	2 6-3 0	—White Crawford	—
—short	2 6-3 0	Snowdrop, per doz. bun.	3 0-4 0
—lancifolium album, long	2 0-2 6	Spiraea, white, per doz. bun.	—
—short	2 0-3 0	Stock, double white, per doz. bunches	—
—lancifolium rubrum, per doz. long	2 0-2 6	Tuberose, per packet, 24 blooms	1 6—
—short	1 6—	Tulips, single, white, per doz.	8 0-9 0
Lily-of-the-Valley, per dozen bunches	—	—coloured, per doz. bun.	7 0-10 0
—extra special	24 0—	—double orange, per doz. bun.	18 0-21 0
—special	15 0-18 0	—red, per doz. bun.	18 0-24 0
—ordinary	—	—pink, per doz. bun.	15 0-18 0
Orchids, per doz.	—	Violets, per doz. bunches	2 6-3 6
—Cattleya	12 0-15 0	—double, Marie Louise, per doz. bun.	4 0-6 0
—Cypripedium	2 0-3 6	—Princess of Wales	2 0-3 0
—Odontoglossum crispum	4 0-5 0	—White Heather, per doz. bun.	1 0—
French and Guernsey Flowers, s.d. s.d.			
Anemone, double pink, per doz. bun.	1 6-2 0	Ranunculus, red, per doz. bun.	8 0-9 0
—de Caen, mix., per doz. bun.	6 0-7 0	—Barbarous, per doz. bun.	3 0-4 0
—mauve, per doz. bun.	4 0-5 0	—carmine, per doz. bun.	3 0-4 0
Marguerites, velvety, per doz. bunches	2 0-2 6	Safrano Roses, per packet, 24's	—
Mimosa (Acacia), per pad	6 0-7 0	Stock, white, per pad	5 0-6 0
Narcissus, Grand Primo, per doz. bun.	3 0-4 0	Violets, Parma, large bun.	3 0-4 0
—paper white, per pad	5 0-6 0	—each	—
—Soleil d'Or (Guernsey), per doz. bun.	3 6-4 6	—single, per pad, 48-60's	—
—per doz. bun.	—	—per doz.	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Adiantum (Maidenhair Fern) best, per doz. bunches	7 0-8 0	Fern, French, per doz. bunches	0 6-0 8
Agrostis (Fairy Grass), per doz. bunches	2 0-4 0	—common	4 0-5 0
Asparagus plumosus, long trails, per half dozen	1 6-2 0	Galax leaves, green, per doz. bunches	—
—medium, per doz. bunches	12 0-18 0	Hardy foliage, various, per doz. bun.	4 0-8 0
—Sprengeri	8 0-12 0	Honesty, per doz. bunches	10 0-12 0
Berberis, per doz. bun.	4 0-5 0	Lichen Moss, per doz. boxes	15 0-18 0
Carnation foliage, per doz. bunches	4 0-5 0	Moss, gross bunches	7 0-8 0
Croton foliage, per doz. bunches	12 0-15 0	Myrtle, doz. bun. English	6 0—
Cycas leaves, per doz.	5 0-12 0	—small-leaved	—
Eulalia japonica, per bunch	—	—French, per doz. bunches	1 0-1 3
—	—	Smilax, per bun. of 6 trails	1 3-1 6

REMARKS.—Red and Pink Roses Liberty and Mue Abel Chateau are still being marketed in fairly good

condition. There will be from now a shortage of these blooms for a fortnight or three weeks until the new crops are ready. A few bunches of Primroses were offered for sale today. Snowdrops are arriving in excellent condition. The blooms are exceptionally fine this season, and the demand is good. Daffodils and Tulips begin to give a spring-like appearance to the market. Large supplies, in better condition, are being received daily. Double Orange and Double Red and Double Pink are now added to the list of Tulips. With the exception of Liliums, Roses and Lilies-of-the-Valley, supplies are heavy, and prices are lowering. Flowers from Guernsey and the Selly Isles are coming to hand in good condition. There is abundant supply of English-grown Violets. With the exception of single Violets, all French flowers are arriving in better condition. Anemones and Ranunculus are more plentiful.

Plants in Pots, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Aralia Sieboldii, dozen	4 0-6 0	Ferns, choicer sorts, per doz.	8 0-12 0
Araucaria excelsa, per doz.	18 0-21 0	—in 32's, per doz.	10 0-18 0
Asparagus plumosus, per doz.	10 0-12 0	Ficus repens, 48's, per doz.	4 6-5 0
—Sprengeri	6 0-8 0	—60's, per doz.	3 0-3 6
Aspidistra, per doz. green	21 0-30 0	Geonoma gracilis, 60's, per doz.	6 0-8 0
—variegated	30 0-60 0	—larger, each	2 6-7 6
Azalea, each	2 6-3 6	Grevillea, 48's, per doz.	—
Begonia, Gloire de Lorraine, 48's, per doz.	10 0-12 0	Hyacinths, white and coloured, 48's, per doz.	10 0-12 0
Cacti, various, per tray of 15's	4 0—	Kentia Belmoreana, per doz.	4 0-8 0
—tray of 12's	5 0—	—Forsteriana, 60's, per doz.	4 0-8 0
Cocos Weddelliana, 48's, per doz.	18 0-30 0	—larger, per doz.	18 0-36 0
—60's, per doz.	8 0-12 0	Latania borbonica, per doz.	12 0-30 0
Croton, per doz.	18 0-30 0	Lilium longiflorum, per doz.	24 0-30 0
Cyclamen, per doz.	10 0-12 0	—florim, per doz.	24 0-30 0
Daffodils, 48's, per doz.	8 0-10 0	—white, 48's, per doz.	7 0-8 0
Dracena, green, per doz.	—	Pandanus Veitchii, per doz.	36 0-48 0
Erica, white, 48's, per doz.	12 0-15 0	Phoenix rufi-cola, each	12 6-21 0
—pink, 48's, per doz.	10 0-12 0	Solanum, 48's, per doz.	8 0-10 0
—thumbs, per doz.	3 6-6 0	Spiraea, white, per doz.	10 0-12 0
Ferns in thumbs, per 100	8 0-12 0	—pink, per doz.	—
—per 100, in small and large 60's	12 0-20 0	Tulips, scarlet, on bulbs, per doz.	1 3-1 6
—in 48's, per doz.	5 0-6 0	—white, on bulbs, per doz.	1 6—

REMARKS.—Little change was noticeable in the department, and business is only moderate. White Marguerites, Azalea, and flowering bulbs are the chief subjects on sale.

Fruit Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Apples—		Grape Fruit, per case	12 0-16 0
—Albemarle, per barrel	30 0-35 0	Grapes, English, black, per lb.	0 10-2 6
—Californian, per box	7 0-8 0	—Canon Hall, per lb.	2 0-5 0
—English, per box	4 0-7 0	—Muscat, per lb.	4 0-6 0
—Nova Scotian, per barrel	11 0-20 0	—Almeria, per lb. of 60 lbs.	18 0-22 0
—Oregon, per case	9 0-12 0	Lemons, per case	12 6-25 6
—Wenatchee, per case	9 0-12 0	Lyches, per box	1 4-1 6
Apricots, Cape	4 0-6 0	Nuts, Brazils, new, per cwt.	65 0-70 0
Bananas, bunch—		—Cocanuts, per 100	21 0-24 0
—Medium	7 0-7 6	—Messina cohs, per bag	44 0—
—X-medium	8 0-10 6	Oranges, per case	12 0-40 0
—Extra	9 6-12 6	—Californian, seedless, per case	18 0-20 0
—Double X	11 0-14 6	Peaches, Cape	3 0-8 0
—Giant	15 0-16 0	Pears, per case	18 0-22 0
—Red, per ton	£20 0—	—Cape, stewing, per bus.	5 0-6 0
—Jamaica, per ton	£14 0—	Plums, Cape	4 0-6 0
Chestnuts—		Strawberries, forced, per lb.	6 0-10 0
—Italian, per bag	18 0-22 0	Walnuts, French, per bag	10 0-11 0
—Spanish, per bag	9 0-12 6		
Cobnuts, per lb.	0 5-0 6		
Cranberries, per case	12 0-13 0		
Dates, per doz. boxes	6 0—		

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes, Globe, per doz.	3 0-3 6	Cucumbers, per doz.	8 0-15 0
—Jerusalem, per bag	4 0—	French Beans (Guernsey), per lb.	2 0—
Asparagus, Paris green	2 0-3 0	Garlic, per lb.	0 10-1 0
Aubergines, per doz.	—	Greens, per bag	1 0—
Beetroot, per bus.	2 0-3 0	Herbs, per doz. bun.	2 0-6 0
Beans, Madeira, per ½ bus.	1 6-5 0	Horseradish, per bundle	3 0-4 0
Brussels Sprouts, per ½ bus.	2 6—	Leeks, per doz.	2 0-3 0
Cabbage, per tally	2 6-4 0	Lettuce, Cabbage and Cos, per doz.	1 0-6 0
Carrots, per doz.	2 6-3 6	Mushrooms, cultivated, per lb.	0 9-1 0
Cauliflowers, per tally	6 0-8 0	—Buttons	0 10-1 3
Celeriac, per doz.	3 0-4 6		
Celery, per fan	0 9-1 6		
Chicory, per lb.	0 8—		

Vegetables: Average Wholesale Prices—Cont.

	s.d. s.d.		s.d. s.d.
Mustard and Cress, per doz. punnets	1 0—	Rhubarb, Forced, per doz.	1 0-1 4
Onions, English, per ton	11 0-16 0	—natural, per doz.	6 0—
—spring, per doz. bun.	1 0—	Savoy, per tally	3 6-5 0
—Valencia, per case	13 0-14 0	Seakale, per doz. punnets	8 0-10 0
Parsnips, per bus.	2 6—	Shallots, per ½ sieve	3 0-3 6
Potatoes, new	0 6—	Spinach, per bus.	3 6—
—Algerian, p.b.	0 4-0 5	Tomatoes: —Teneriffe, per bundle	10 0-16 0
Channel Islands, per lb.	0 6-0 7	Turnips, per cwt.	4 0—
Radishes, per doz. bun.	0 9-1 3	Turnip Tops, per bus.	1 0—
		Watercress, per doz.	0 6—

REMARKS.—Supplies of English Apples are now very limited, but fruits from overseas are plentiful, packed in barrels and boxes. A fairly good supply of Pears is available. Winter Nuts being the principal kind. Shipments of Cape Nuts chiefly consist of Peaches, Apricots, Plums and Pears. Forest Strawberries are now beginning to arrive. Black Grapes continue plentiful, and are reasonable in price. Of Muscats, as is usual at this season, the supply is limited. Dwarf Beans from Guernsey and Madeira are becoming more plentiful. Much larger supplies of Seakale and Rhubarb are reaching the market, and Teneriffe Tomatoes are plentiful. There are heavy supplies of all kinds of green vegetables, owing to the mildness of the season. E. H. R., Covent Garden Market, January 19, 1916.

Potatoes.

	s.d. s.d.		s.d. s.d.
Bedford—		Lincoln—	
King Edward	4 6-5 0	Eclipse	4 6-4 9
Blackland	4 0-4 3	Evergood	4 0-4 6
Dunbar	6 6-7 0	King Edward	4 9-5 6
Kent—		Queen	4 6-5 3
Eclipse	4 6-5 0	Scotch—	
King Edward	5 0-5 3	King Edward	4 9-5 3
Queen	4 9-5 3		

REMARKS.—Trade slow, except for best tubers, which are difficult to obtain.—E. J. Newborn, Covent Garden and St. Pauls, January 19, 1916.

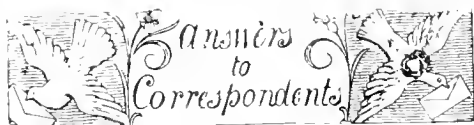
THE WEATHER.

WEATHER IN WEST HERTS.

Week ending January 19.
The Fourth Unseasonably Warm Week in Succession.
Another unseasonably warm week, and the fourth in succession. In fact, there has not been a single unseasonably cold day since December 21, or for over four weeks, and in the same period only two cold nights. On the one cold night of the past week the exposed thermometer registered 10° of frost, which is only a very moderate frost for this the coldest period of the whole year. The ground is at the present time 5° warmer at 1 foot deep and 4° warmer at 2 feet deep than is reasonable. Rain fell on three days, but to the total depth of less than a quarter of an inch. During the week three-quarters of a gallon of rainwater came through both the bare soil percolation gauge, and also through that on which short grass is growing. The sun shone on an average for 14 hours a day, which is a quarter of an hour a day short of the mean daily duration for the month. The wind was very variable in strength, but at no time exceeded that of a strong breeze. Since the beginning of December, or for seven weeks, the direction of the wind has been almost entirely some point between south and west. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a reasonable quantity for that hour by 5 per cent. E. W.

CATALOGUES RECEIVED.

Seeds.
DICKSON, BROWN AND TAIT, Manchester.
W. DEDMOND AND SONS, LTD., Stirling.
EDMONDSON BROTHERS, 10, Dame Street, Dublin.
FISHER, SON, AND SHIRLEY, LTD., Handsworth, Sheffield.
HARRISON AND SONS, Leicester.
JOHN JEFFERS AND SON, LTD., Cirencester.
KEAT AND BEADON, Darlington.
LITTLE AND BALLANTYNE, Carlisle.
JOHN McKECHIE, 35, Giesbach Road, Upper Holloway, London.
THOMAS METHVEN AND SONS, 6, Frederick Street, Edinburgh.
D. W. THOMSON, 115, George Street, Edinburgh.
WATKINS AND SIMPSON, 12, Tavistock Street, Covent Garden, London. (Wholesale).
E. WEBB AND SONS, Wordsley, Sturbridge.
J. C. WHEELER AND SON, LTD., Gloucester.
DANIELS BROS., LTD., Norwich.
W. DEDMOND AND SONS, LTD., 57 and 58, Dawson Street, Dublin.
W. SAMSON AND CO., 8, 10, Portland Street, Kilmarnock.
W. SMITH AND SON, 18, Market Street, Aberdeen.
D. G. PURDIE, Glasgow.
AGRICULTURAL AND HORTICULTURAL ASSOCIATION, LTD., 92, Long Acre, London.
FRANK DICKS AND CO., 110, Deansgate, Manchester.
ATKIN AND McALEX, 89, Mitchell Street, Glasgow.
KELWAY AND SON, Langport, Somerset.
Foreign.
JOHANNES RAFF, Copenhagen F.—Tree Seeds.



ACORN: F. Agnes. The Acorn is from *Quercus Aegilops*, which is hardy in the London district. Sow seeds in gentle bottom heat at once, using a somewhat damp, sandy soil, and keeping them on the dry side until they germinate. If you are successful the plants will have a certain historical value, having been sent from the Gallipoli Peninsula in war time.

BIRDS AND LIME-SULPHUR WASH: T. J. P. Lime-sulphur is troublesome and messy to make, but it can be bought ready-made. To make 20 gallons of the concentrated solution, place 24 lb. of freshly-burnt quick lime in an iron boiler, pour on it sufficient water to slack it, adding at once 48 lb. of flowers of sulphur, and stir the mixture well. Add water to make 23 gallons, to allow for waste, stirring frequently until the mixture boils, and boil for at least 45 minutes, continuing to stir occasionally. When boiled sufficiently the solution is a clear reddish-brown liquid. When cool, strain it into a cask, and bung the cask. If the cask is not quite full, pour a little paraffin in to exclude the air. Then the solution will keep for a long time. For winter spraying add to 3½ gallons of the solution 40 gallons of water, if the mixture shows a density of 30 degrees on the Baumé hydrometer, or 1.265 on the ordinary specific gravity hydrometer. For every degree Baumé lower than 30 add ¼ gallon of the solution for 40 gallons of water; and for every degree higher than 30 reduce the quantity of the solution ¼ gallon to make 40 gallons of wash. Spray thoroughly as soon as birds begin to eat the buds. The material sticks well on the trees, but if it is washed off in time by rain the spraying should be repeated. The factory-made lime-sulphur is usually strong enough for 5½ gallons to be used in 40 gallons of water. It is not guaranteed that the spraying will prove an absolute preventive of bird-eating by birds; but no better specific is known. Like other washes, lime-sulphur should be strained into the spraying machine.

COAL DUST AND FINE BREEZE: P. I. The bricks you have made of coal dust and fine breeze appear to be fairly satisfactory, though lacking the cohesion and firmness of the "bricks" sold in the shop. These are subjected to a chemical process, the particles of which the patentees keep to themselves. However, fine coal and small breeze may be used to advantage in furnaces attached to houses in which only a moderate temperature is required. Chalk, where plentiful, may be mixed with the fine coal and breeze, and its inclusion would be an advantage in getting the most out of the fine fuel.

DISTRIBUTION OF SEWAGE: B. W. The overflow from your sewage tank consists largely of diluted liquid matter, a large percentage of which appears to be rain water. If the tank is automatically emptied over the area you intend to set apart for the purpose, nothing objectionable to the eye or otherwise need arise. The surface of the soil thus fertilised should be pricked over once or twice during the summer months with a digging fork, in order to preserve the effects of the sewage overflow in the soil, and also to prevent any disagreeable smell or anything objectionable to the eye arising therefrom. The distribution of this diluted overflow will fertilise your land to a certain extent. Your proposition to clear out one of the tanks, A or B, and arrange it as a separate tank, would appear to be advisable. If you wish to dispose of the overflow sewage into a reservoir for future use it will be necessary to provide an underground drain. The soil of your garden does not appear to be particularly suitable for the growing of fruit, flowers, or vegetables.

GARDENER'S LICENSE: Livenet. Male servant's licences have to be taken out for both gar-

deners and under-gardeners unless they are only occasionally employed or are engaged for a portion of the day only and not resident with the employer. This, however, only applies to private servants. No licence is required for gardeners engaged by a nurseryman solely for trade purposes.

INSECTS ON ORCHIDS: Adriane. The insects are a species of *Polydorus*—one of the flat millepedes. Your plan of trapping them by means of Potatos is the best method of eradicating them.

LATE CHRYSANTHEMUMS: Constant Reader. Yes, you may propagate certain of the late-flowering varieties of Chrysanthemums in May with a fair chance of success, provided, of course, that the after treatment is satisfactory; though it is doubtful if the varieties you name would make plants sufficiently good for your purpose. Propagating as late as May would only allow you to pinch the plants once, and the first week in July is almost the latest date to pinch even late-flowering varieties. In addition to those you enumerate we would recommend you to try Winter Cheer, Heston White, Rosalind, Bertha Lachaux, Enfield White and Nagoya. The varieties used by market growers for flowering in 4½-sized pots are usually reliable standard sorts specially treated. One or two trade growers make a speciality of this phase of Chrysanthemum cultivation.

MALFORMED STEMS OF BRUSSELS SPROUTS: S. McG. The cause of the Brussels Sprouts having "corkscrew" stems is due to planting them in loose soil and not deeply enough.

MARKET VALUE OF VEGETABLE CROPS: J. S. Millar. It is not an easy matter to state, even roughly, the average market value per acre of such crops as Peas, Beans, Beetroot, Broccoli, Brussels Sprouts, Carrots, Celery, Onions, Parsnips and Radishes. Much depends upon the skill of the cultivator, as well as on the soil and locality. Assuming, however, that the gardener knows his business he will reap good average crops, taking one year with another, and will obtain good, bad or indifferent prices, according to the state of the market. The man who cultivates best will not only have the best produce, but will also secure the heaviest crops and the highest prices. The following figures may be regarded as fair average values of the various crops mentioned, grown under ordinary market garden conditions:—

	Tons per acre.	Value per acre. £
Beans, Broad ...	8 to 10	10 to 20
.. Dwarf ...	10 to 12	25 to 35
.. Runner ...	7 to 10	15 to 30
Beetroot ...	8 to 10	15 to 30
Broccoli ...	10 to 15	30 to 40
Brussels Sprouts ...	3 to 4	20 to 30
Carrots ...	15 to 20	30 to 40
Celery ...	8 to 12	30 to 40
Onions ...	10 to 15	35 to 60
Parsnips ...	15 to 20	25 to 50
Peas ...	3 to 4	20 to 40
Radishes ..	Doz. bunches. 1,000 to 2,000	25 to 50

To arrive at the net profit per acre, the cost of seed, labour, rent, manure and other expenses must be deducted.

MILDEW ON ROSES: L. P. Certain varieties of Roses are very susceptible to attacks of mildew, and if such sorts are grown in a collection it makes the work of keeping others free of the fungus a very difficult task. The trouble has not arisen from "the roots of the plants becoming very dry before they were planted," but it is possible the plants were not made firm enough about their roots, and thus they suffered from drought the following summer. In your county, Norfolk, the soil is generally of a light porous nature, and this may largely account for the presence of mildew on the Roses. Had you thoroughly soaked the roots with water during May and June, and afterwards mulched them with

short, well-rotted manure, this might have saved you trouble, especially seeing that the Roses were planted in the spring. We should advise you to adopt a severe system of pruning and make sure that the roots are well supplied with moisture during the growing season. When new growth is well advanced spray the bushes at frequent intervals with the specific known as Seride No. 2.

NAMES OF PLANTS: C. F. S. *Leptotes bicolor*.—*Mrs. H. S., Northcote.* *Cornus capitata*, often called *Benthamia fragifera* in gardens.—*A. P.* *Crocus Imperati*.

PROTECTION OF WOOD FENCING FROM CATTLE: G. W. B. G. In order to prevent horses and other farm stock from gnawing wood fencing paint the fence with creosote or carbolineum and bitter aloes in the proportion of a gallon of the former to an ounce of the latter. Or paint the fences with hot tar, and before this becomes dry sprinkle the surface with sharp sand. A teaspoonful of tincture of asafoetida in half a bucket of liquid clay applied with a brush has been found an excellent remedy to prevent hares from injuring trees, and it might prove to be so in the case of horses. When trees are attacked, fencing of iron or wood is the best preventive. Cheap tree guards may be made of split Chestnut poles or purchased at a few pence per yard.

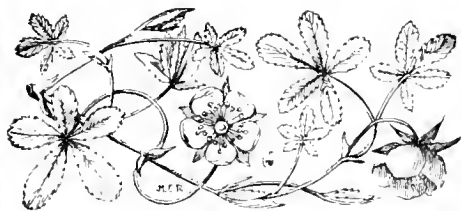
TARRED FLOOR UNDER COVER: F. A. E. The quantity of tar used is two gallons per superficial yard. Previous to applying the heated tar, the floor, preferably dry and gravelly, should be made quite clean. Asphalt-ing is quite a different process, and your best plan would be to consult one of the firms who undertake such work.

TREES FOR SCREEN: C. T. Cockburn. The following trees, all of which thrive by the seaside, are suitable for your purpose. Deciduous:—Black Italian, Lombardy, and Canadian Poplars; *Salix alba*, *S. babylonica*; *Wych* and *Guernsey Elms*; *Mountain Ash*, *Service Tree*, *Common Beech*, and *Turkey Oak*. Evergreen:—*Cupressus macrocarpa*; *Pinus insignis*, *P. Pinaster*, *P. austriaca*, *P. Laricio*; *Tsuga Mertensiana*, and *Evergreen Oak*. These are placed according to their rate of growth, the fastest growers being enumerated first. The deciduous species should be planted fairly thick, as the supernumeraries can be transplanted successfully, whereas evergreens are best planted small. With an eye to the future, some of the deciduous trees could be removed as the evergreen subjects grow, without in any way interfering with the desired screen. The foreground could be planted with *Holly*, *Box*, *Elaeagnus*, *Escallonia*, *Guelder Rose*, *Hydrangea*, *Spiraea*, and other flowering shrubs.

TULIP VAN TUL UNSATISFACTORY: T. and Son. The bulbs were, with one exception, of good size, and such as might have been expected, with proper treatment, to produce flowers. Moreover, all contained flower buds, though in some instances they had not developed. With one exception, too, the bulbs were healthy. It is not easy to predict the cause of their failure, though the attenuated growth and "blind" buds of some of the bulbs point to some error in cultivation.

VEGETABLES FOR MARKET: H. H. It would not be worth while for you to send to any market salesman small quantities of vegetables at odd times; he would not be willing to handle them unless he knew he could depend on supplies arriving with a certain amount of regularity. Moreover, you would find it very difficult to compete with the regular market growers, who have many years' experience of the requirements of such trade. You would most likely find it more profitable to make arrangements with a local salesman or retail shop to take your surplus produce.

Communications Received.—*Mrs. K.—A. P.—B., Ltd.*—*R. H. S.—S. R. H. S.—B. and Sons—W. A. W.—J. K. H. and S. J. D. R.—W. E. B.—F. H.—J. C.—T. S. F. C. H.—E. R. J.—U. of B.—E. M.—A. G.—R. P. B. K. and Son—J. A. P.*



THE

Gardeners' Chronicle

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THE BEST HARDY CONIFERS.

MR. E. H. WILSON, writing in the December number of the *Garden Magazine* (New York), discusses, on the basis of the evidence supplied by the Arnold Arboretum, the Conifers which have proved hardiest in the somewhat rigorous climate of New England. He points out that experience at the Arboretum demonstrates in general that the Conifers of north-eastern North America, the Rocky Mountains, Northern, Central, and South-Eastern Europe, Siberia, Northern China, and Northern Japan are hardy; that but few of the species from Western N. America may be safely planted at Boston, and that the Conifers of the Southern United States, Mexico, Central America, Southern China, Formosa, Himalayas, South-Eastern Asia, and the southern hemisphere are, as a rule, not hardy in New England.

Of the Firs, Mr. Wilson signalises for special mention *Abies concolor*, the best as a lawn tree and for ornamental planting generally, and of which the Colorado form is very hardy. *A. homolepis* (*A. brachyphylla*), the Japanese species, with the silvery lower surface of its leaves, makes a fitting companion for *A. concolor*.

The Cilician Fir *A. cilicica*, from the mountains of Asia Minor, which does not thrive in England, succeeds well in some parts of New England, as do also the Crimean and Caucasian *A. nordmanniana* and *A. cephalonica* from the Greek archipelago. *A. Veitchii*, from the mountains of Central Japan, also thrives well.

The American history of the Douglas Fir (*Pseudotsuga Douglasii*) is interesting. Discovered first by Menzies in 1792, during Vancouver's voyage round the world, and rediscovered by Douglas in 1827, it was introduced into Great Britain in 1828, and, finding conditions not very dissimilar from those obtaining on the moist Pacific slope, it soon became established here. Hence it was introduced to Eastern North America, but failed to prove hardy in the colder regions. Luckily, in 1862 this Fir was found growing at high elevations in Colorado, and seed from this source has yielded a race of quick-growing and hardy trees. Specimens in the Arnold Arboretum forty years old are 50 and more feet high.

One of the most extensively-planted Conifers is the Colorado Blue Spruce *Picea pungens*—a hardy plant and very beautiful in its young state, though the habit of older specimens of losing their lower branches is an argument against its extensive plantation. The Norway Spruce (*P. excelsa*) has also been planted extensively in America, where it grows quickly, but is apt to become thin and bare at the top when planted in wind-swept districts. The Canadian or white Spruce has the merit of being one of the hardiest of trees, and is useful for planting in situations where other Conifers fail. *P. omorica*, the Serbian Spruce, discovered in 1872, has grown well since its introduction into America, and so also has the Oriental Spruce (*P. orientalis*), the young shoots of which, bright yellow in colour, contrast delightfully with the dark, lustrous greenness of the mature foliage.

Mr. Wilson gives high praise to the Common Hemlock (*Tsuga canadensis*), and holds that the best variety is *T. C. Sargentiana*, a dense, flat-topped bush with pendant branches and branchlets. Another promising species is the Carolina Hemlock (*T. caroliniana*), discovered by Professor L. R. Gibbes in the Blue Ridge Mountains of North and South Carolina, and in the Southern Alleghenies.

Of Pines the native Weymouth Pine, *P. Strobus*, one of the noblest of the genus, and *P. monticola*, from Western North America, *P. flexilis* (the Foxtail Pine of Montana, Nevada, and other western parts), *P. Penke* (the White Pine of the Balkans, introduced into America in 1869), are all hardy; so also is the Japanese White Pine, *P. parviflora*, a favourite of Japanese gardens, and one that lends itself to training in dwarf and fantastic shapes, especially when grafted on *P. Thunbergii*. The Korean Nut Pine, *P. koraiensis*, grows well, and promises to be more satisfactory than its Swiss ally *P. Cembra*.

Both Scots and Austrian Pines have been extensively planted in New England, but neither has proved very satisfactory. Better than the Austrian is the native Red Pine, *P. resinosa*, one of the best for the New England climate, and one which, according to Mr. Wilson, should be planted in preference to any of its allies.

For cold districts the Jack Pine (*P. banksiana*) and Scrub Pine (*P. vir-*

giniana), both low-growing, and for sea-shore planting *P. Thunbergii* are recommended.

The Cedar of Lebanon (*Cedrus libani*), so superb in this country, is not generally hardy in New England; but inasmuch as this Cedar grows also on the Anti-Taurus Mountains in Asia Minor, the Director of the Arnold Arboretum caused seed to be collected in that region. The seed was sown in 1902, and none of the seedlings, though planted in exposed places, has suffered: some are now 18 to 20 feet high.

Neither *C. atlantica* nor *C. deodara* is quite hardy in New England. That most distinctive of Conifers, the Umbrella Pine of Japan (*Sciadopitys verticillata*) is, however, perfectly hardy, and in cool, moist situations thrives better than in England.

Success, following upon initial failure, has also been achieved with the giant *Arborea Thunja plicata*=*T. gigantea*, which, in the valley of the Columbia river in Western North America, reaches the height of 200 feet. Discovered so long ago as 1789-1794 by Née, it was first introduced in 1853 by William Lobb, who sent seed to Veitch, of Exeter. Plants sent from England to the Eastern States failed, but seed obtained from Idaho, where the plant was later on discovered, have yielded a hardy race. *T. occidentalis*, the native White Cedar, is notable on account of the great variety of forms which it has produced under cultivation. Of Junipers, *J. virginiana* and *J. chinensis* are perfectly hardy; but the English Yew (*Taxus baccata*) is not. Hence for New England gardens the Japanese Yew, *T. cuspidata*, is to be recommended.

Of Larches the native *Larix americana*, though a denizen of swamps, grows well on dry hillsides. Both European and Japanese Larch thrive, as does also the Chinese Golden Larch (*Pseudolarix Kaempferi*), an admirable subject for lawns and parks. We have cited freely from Mr. Wilson's excellent article, and may only hope that the account which we have given of his observations and of the work of the Arnold Arboretum in discovering hardy forms may encourage some in this country to endeavour to brighten our winter landscapes by wider and more vivid planting of ornamental Conifers.

FRUIT REGISTER.

GRAPE COOPER'S BLACK.

A BASKET of what purported to be this Grape was placed before the R.H.S. Fruit and Vegetable Committee on Tuesday, the 11th instant, by Mr. E. Beckett, of Aldenham Gardens, Elstree, more for the purpose of eliciting information as to its origin and identity than for an award on its merits, although the exhibit presented an example of excellent cultivation.

Mr. Beckett has grown this Grape for upwards of 30 years, and speaks highly of its heavy cropping qualities, colour, finish and bloom, of which qualities the bunches before the committee bore evidence. In size and shape of bunch it seemed to favour Black Alicante, but the berries were rounder, and perhaps slightly larger than in that variety. In colour and bloom it is somewhat reminiscent of Gros Maroc.

It would be interesting if someone amongst the readers of the *Gardeners' Chronicle* would state the origin and history of this Grape. Mr. Barron, in *Vines and Vine Culture*, speaks of Cooper's Black "as greatly resembling Gros Maroc, if it be not identical with it." The bunches shown by Mr. Beckett were certainly not Gros Maroc. One member of the committee thought it greatly resembled Kempsey's Alicante, a variety raised in Worcestershire many years ago. Barron, on the contrary, states that Kempsey's Alicante is identical with Black Morengo. O. T.

which measured 115 feet high by 13 feet in girth, and had its roots partly cut through. He estimated its age at about 150 years. Mayr, however, records larger trees than this, one which he measured in a Chestnut forest being 134 feet high, and another over 20 feet in girth.

From the other Cypresses of the *Chamaecyparis* section this species is best distinguished by its sharply pointed leaves with white markings below, which are, however, less clearly defined than in *Cupressus obtusa*.

Cupressus pisifera has been cultivated for hun-

the typical form, it occasionally bears fruit exactly like that of the type, and cases are known in which branches have reverted to the ordinary foliage of *C. pisifera*.

Syme discusses the relationship of the *Retinisporas* at some length,† and by raising large numbers of seedlings showed how these passed, after a few months' growth, from the "squarrosa" to the plumosa stage, and eventually developed the adult foliage of *C. pisifera*. A few of the seedlings, however, did not change from the juvenile stage until they were two years old, and one plant, when three years old, changed into the plumosa stage, and remained so. These observations show that *C. pisifera* passes from youth to age through three distinct phases, represented by well-marked differences in foliage character. The Sawara Cypress does not attain to any great size in England, and, so far as I know, there are no trees of 50 feet in height on record. The finest specimens recorded by Elwes are at Bicton, 46 feet by 4 feet 10 inches, in 1906;‡ and at Canford Manor, Dorset, 40 feet by 4 feet 3 inches, in 1906, but I did not see this specimen when I was there in 1913. At Moncrieffe, some years ago there was a tree 38 feet by 3 feet 10 inches. At Penjerrick, Cornwall, in 1909, I saw a good specimen 30 feet high; at Highnam Court, Gloucester, one of the variety plumosa 31 feet high; and at Westonbirt, in 1908, one of the typical form 27 feet by 2 feet 3 inches. At Lamellan, Cornwall, in 1909, I saw good examples of the var. squarrosa 20 to 25 feet high, and one of the var. plumosa about 20 feet in height. The tree from which the specimen represented in Mr. Wallis's photograph is taken grows on the edge of a plantation at Woburn. It was probably planted in 1878, and is now about 30 feet high.

In Japan the timber is used in the construction of buildings and for interior work, though it is not so much in demand as that of *C. obtusa*. J. Bruce Jackson.



FIG. 24. *CUPRESSUS PISIFERA*: $\frac{2}{3}$ NAT. SIZE. (Photograph by E. J. Wallis.)

NOTES ON CONIFERS.

XIII.—*CUPRESSUS PISIFERA**

In my experience, this Japanese Cypress in one or other of its forms is the Conifer most commonly met with in gardens next to the ubiquitous "Lawson," and seems to be much more frequently planted than *Cupressus obtusa*, which has the same origin and was introduced with *C. pisifera* in 1861 by John Gould Veitch.

In Japan, *Cupressus pisifera*, known there as the Sawara Cypress, occurs wild in the main island, being associated in the natural forests with *C. obtusa*. Elwes found one specimen here

decades of years in Japan, and has given rise to numerous varieties. The best known of these are:

Var. plumosa Masters (*Retinispora plumosa* Veitch). This is no doubt a juvenile state of the type which has become permanent. It is usually a dense shrub, of conical habit, with crowded, more or less overlapping branchlet systems, the leaves being subulate and spreading. This variety, which appears to be exceptionally hardy, was introduced by John Gould Veitch at the same time as the type.

Var. squarrosa Masters (*Retinispora squarrosa* Siebold et Zuccarini). A small tree or dense shrub, with handsome glaucous foliage, the leaves soft in texture, in opposite decussate pairs or whorls of four, and decurrent on the branchlet. This also is a variety in which the juvenile form of foliage occurring in seedlings has become permanently fixed. It was introduced in 1843.

Var. filifera Masters (*Retinispora filifera* Standish). A bush or shrub with spreading branches and long, pendulous branchlets, which are undivided for a greater part of their length. Seemingly a very distinct plant, and far removed from

"SOOTY BLOTCH" OF THE PEAR.

In 1879 F. von Thümen described in his book, *Fungi Pomicoli*, p. 110, a species of *Leptothyrium* (causing a "Sooty Blotch" on the Pear), to which Passerini, in the *Exsiccati*, known as "Herb. mycolog. oeconomicum" had just previously given the name of *L. carpophilum*. The fungus was found attacking Pears, after they had been stored for a long time, at Vigheffia, near Parma, Italy.

So far as we can find, this has remained the only recorded case of the disease. In November we met with two instances where Pears of the Catillac variety—in one case grown in a garden at Reigate, Surrey, and in the other case at Wye, Kent—became severely attacked by the "Sooty Blotch." A photograph of the general appearance of the disease is given in fig. 28.

Von Thümen, after giving a Latin diagnosis, says: "This fungus forms on the skin of the Pear large, brownish, somewhat dried-up patches, which are almost circular and sometimes coalesce." This describes the general appearance of the fungus as it has occurred on Pears in this country; it exactly resembles (except in the points mentioned below) the "Sooty Blotch" of the Apple (*Leptothyrium Pomi*), first described for this country by one of us in these pages.

At first sight the "Sooty Blotch" of the Pear might be taken for an incipient attack of "scab" (*Euscladum*), but on close examination with a pocket magnifying-glass, and unmistakably after microscopical examination, the fungus is seen to be a very different one.

The following observations have been made on the apparent differences between the "Sooty Blotch" of the Pear and of the Apple.

* *Gard. Chron.*, V., 235 (1876) and XV III, 335 (1882).

† Figured in Elwes and Henry, *op. cit.*, V., t., 395 (1910).

* *Cupressus pisifera* Koch, *Deendrologie*, II., Part II., p. 174 (1873); Masters, in *Journ. Linn. Soc.*, (Bot.), XL I., 355 (1896); Kent, *Veitch's Man. Conif.*, 224 (1900); Elwes and Henry, *Trees of Great Britain and Ireland*, V., 1190 (1910); Clinton-Baker, *Illust. Conif.*, III., 51 (1913); Bean, *Trees and Shrub s.*, L., 449 (1914).

Chamaecyparis pisifera, Siebold and Zuccarini ex Endlicher, *Son. Conif.*, 64 (1847).

Retinispora pisifera, Siebold and Zuccarini, *Fl. Jap.*, II., 79, t., 122 (1844); Syme, in *Gard. Chron.*, V., 235 (1876).

On the Pear the blotches may be 1-10th to $\frac{1}{4}$ inch in diameter, and are more or less circular in outline, with an indistinct margin. When closely crowded they may become confluent, forming irregular patches an inch or more in

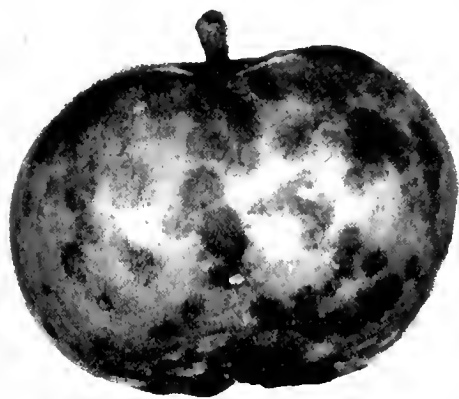


FIG. 25.—"SOOTY BLOTCH" FUNGUS ON APPLE BRAMLEY'S SEEDLING.

length. A hand-lens shows little more than can be distinguished with the naked eye, though sometimes threads can be detected extending outwards from the edge of the "blotch."

It was found that the best method of examining



FIG. 26.—PHOTOMICROGRAPH OF A PORTION OF THE MYCELIUM ("SPAWNS") OF THE "SOOTY BLOTCH" FUNGUS GROWING ON THE SKIN OF A PEAR. (MAGN. 300.)

the fungus microscopically was to take a thin section parallel to and just below the surface of the Pear, thus removing the epidermis with the fungus growing over it. Fig. 26 shows what the threads (hyphae) of the "spawn" (mycelium)

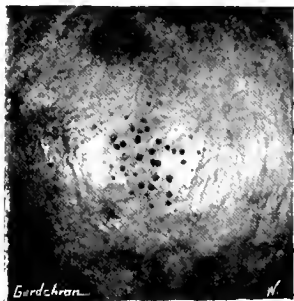


FIG. 27.—THE "FLY-SPECK" STAGE, FOUND WITH THE "SOOTY BLOTCH" OF THE APPLE. (MAGN. 2.)

look like under the microscope. The brown threads consist of cells, some of which are elongated, but a large proportion are very short and barrel-shaped; these short cells are sometimes

clustered, but no definite sclerotia have been observed on the Pear. The threads are irregularly branched, and, as seen under the microscope, are practically all in the same plane, instances of threads crossing one another being comparatively rare. Branches from neighbouring threads, frequently fuse, so that the whole appears as a complicated network of brown threads.

The "Sooty Blotch" fungus on the Apple is very similar in general appearance, as may be seen by the photograph of an affected "Bramley's Seedling," shown in fig. 25; but the blotches usually have a more sharply defined margin and may sometimes show traces of zoning. When examined with a pocket magnifying glass, however, the "blotch" of the Apple can be distinguished from that of the Pear in that it is seen to be dotted over with what look like minute black specks, individually invisible to the naked eye. Each speck is found to consist of a dense mass of barrel-shaped or rounded cells, forming definite sclerotia-like bodies, which are usually

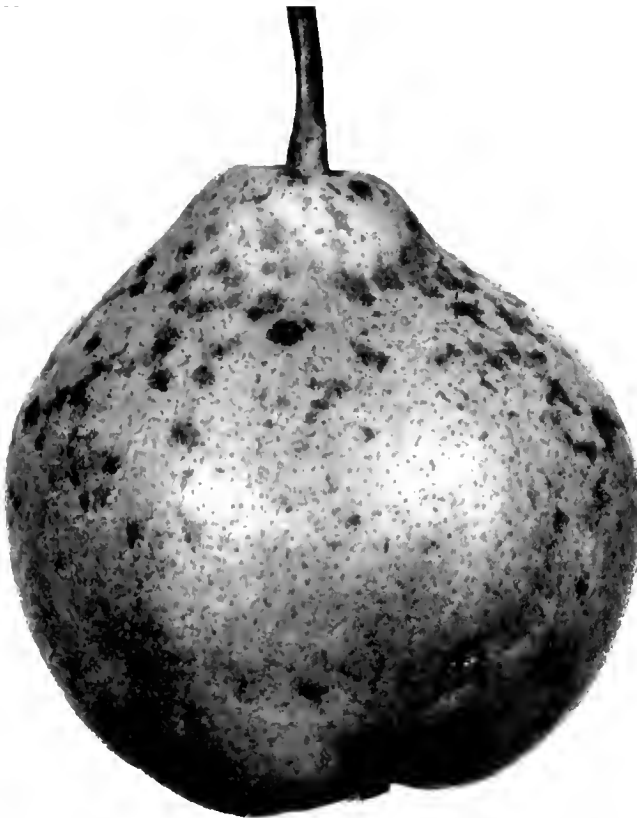


FIG. 28.—"CATILLAC" PEAR ATTACKED BY "SOOTY BLOTCH" FUNGUS.

not more than 1-400 of an inch in diameter. These are not to be confused with the so-called "fly-specks" (supposed to be another stage of the same fungus), the black spots of which are more scattered, and very much larger (about 1-40th of an inch in diameter), and quite easily seen with the naked eye. (See fig. 27.)

While the probability is that this "Sooty Blotch" of the Pear is the *Leptothyrium carpophilum* of Passerini, it will be necessary to find the pycnidial stage of the fungus before the certainty is established. We should be glad if growers of Pears will look over their store of Catillac Pears and other varieties, and send us any example found attacked by "Sooty Blotch." It is possible that the disease has been confused with slight attacks of the "scab" disease, from which it can easily be distinguished by the differences pointed out above. The true "scab" disease (*Fusicladium*) does not develop and spread on either Pears or Apples after these are stored, while it is typical of the "Sooty Blotch" to do so. *E. S. Salmon and H. Wormald, Wye College, Kent.*

MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.*

XXVII.—IN JUNE

OUR hopes of rich and lovely shows of flowering shrubs as soon as the season should open were doomed to be dashed. Up at this height there is very little but Poplar and Willow; day by day the big white *Rhododendron* seems to climb the opposite slopes with its dappled snow-fall, till at last its balls of blossom linger only on the highest ridges beneath the Alps (where they are larger and finer than below), and now the coppices are all gradually breaking into a flame of *Potentilla fruticosa* in every shade, from richest gold to pure white; but, as I believe, mere *P. fruticosa* in its whole range of colour. This itself is a mark of altitude, and though I distrust the aneroid's sanguine estimate of 11,400, I should myself estimate this point, from its circumstances and vegetation, at

some 10,500, admitting the Russian claim of 13,600 for the pass above. The scene round the inn has now changed. All the grass is ablaze with the little *Trollius*, making the effect of some gigantic Marsh Marigold, solitary on a sturdy stem of 4-7 inches, flaunting amid grass-tussocks that its venom protects from the browsing yaks. It is a golden, glowing splendour, and such is the invariableness of yellow in *Trollius* that I was glad at last to find a delicate Citron form. But better still was yet to come. Half-way down the Dene to Bridgehead there is a little holy spring beneath a cliff from which the Lord Buddha smiles down in a blurred haze of glory. And here the *Trollius* has most appropriately furnished the white flower of a blameless life, developing two specimens of a perfectly pure, dense and waxy ivory-white.

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 31, November 14 and 28, 1914, January 2, February 27, March 26, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 10, November 13, 20 and 27, December 11 and 25, 1915, and January 8, 15 and 22, 1916.

most strange and lovely. I only hope that its seed may be true, and, indeed, the occurrence of two pieces seems to suggest that it may. But now I have only one seed-head on which to found my hopes, the other having been nipped untimely off by a certain bird of these parts, like a very large fat sparrow that has fallen, breast forwards, into a dish of Raspberry cream.

The beck-beds are beginning to be blue with a deep sapphire *Dracocephalum*, and here and there, in their stoniest shingles, may be seen tufts of a very interesting and beautiful *Primula*. This is so close to *P. acclamata* of last year (No. 13) that I cannot separate it; but its flower-heads are usually ampler, and much more suggestive in style of *P. conspersa* on a doubled scale. It is a descended form of a yet handsomer type, which we shall ere long see on the heights, and most curiously reverses the rule of *P. stenocalyx*, in which the valley form is quite powderless, and the alpine one powdered. With this *P. acclamata* the stout and splendid alpine type is effarose, except on the pedicels and inside the big purple calyx, while the slenderer, softer, pinker valley-development is white with meal on scape and pedicels alike. Both forms, too, have a very strange peculiarity in the structure of their flowers. For these, often borne on very long pedicels to escape from overcrowding, have the upper lobes laid back, and the lower ones thrust violently forward, in a fashion not paralleled until you get to the remote *Omphalogramma* group. I took a photograph of this valley form, which does not represent the plant, being taken from indifferent specimens, suggestive, in the stem, of wax candles in the dog days. High up we shall find the type in the turf; the descended form, though occurring on grassy banks, is usually seen sporadically in the barer, unoccupied portions of the river shingle, not ascending into the lawns to compete with the *Trollius*, or with the hyacinthine *Iris*, still lingering in blue, sweet charm after some two months of blossoming. At the same time, I will record of this that it grows lanky and sedgy as the season advances; and will add, for the notice of Mr. Dykes, that, while two flowers are the rule to each stem, you not infrequently come on tufts whose scapes have a marked tendency to produce three. The dark blue *Iris*, mentioned before as *I. kelaina*, I cannot help believing to be merely a unique

sport from the hyacinthine type, the more interesting that this is so remarkably stable, and, in many millions of specimens, has only otherwise yielded some seven albinos, without any other noticeable colour-divergence.

Long, however, as is the blooming period of this *Iris*, it is beaten out of the field by *Primula stenocalyx*. I do not think I have ever met with a plant of more protracted season than this plant: certainly with no *Primula*. When I arrived on May 8 it was in lovely bloom on the hot, rocky slope behind the inn; and there, on July 10, it may still be seen in flower to-day. No *Primula*, again, ever seemed so robust and indestructible of habit: no position comes amiss to it, no soil, no elevation; indeed, its amazing abundance becomes at last almost a grievance. For soon one gets accustomed to it, and pants for a new species: but *stenocalyx* occupies the whole region, and whether at 8-9,000 feet in hot loess slopes, or on the topmost crags at 16-17,000, that alluring flash of lavender-blue is sure to prove only the sickening disappointment of *P. stenocalyx*. Its universality is indeed astonishing and unparalleled in my experience of *Primula*: on the high crests you may get *P. optata*, and in the lowlands *P. riparia*; but a *Primula* that is equally profuse and lovely on the loess levels and on the barest topmost peaks is indeed a curiosity, not even to be matched by my *P. kansuensis* (No. 2), for, though this ascends to 14,000 feet on the rocks of Thunder-crown, it is always in thin, poor form, and I have only seen it really rich and luxuriant in the deep enforested cliffs opposite Sabance, between six and eight thousand. Beautiful though as is the general genuina-type of *P. stenocalyx*, the dealbata form of the open mountains has the added attraction of white meal. And while genuina has yielded, indeed, some three albinos or albinoids, these have been but frail and spindly, while *P. st. dealbata* has yielded only one albino, but this quite pure and splendid, of amplitude and vigour fully equal to the finest specimens of the type. *Reginald Farrer*.

ORCHID NOTES AND CLEANINGS.

HYBRID ORCHIDS.

(Continued from December 25, 1915, p. 393.)

Hybrid.	Parentage.	Exhibitor.
<i>Brasso-Laelio-Cattleya</i> Baxter	B.-C. Digbyano-Mossiae × L.-C. luminosa	E. Baxter Cox, Esq.
<i>Cymbidium</i> Capella	Wicarianum × Panwelsii	G. Hamilton Smith, Esq.
<i>Cypripedium</i> A. Gerritsen	San-Actaens × Leeanum	Sander and Sons.
<i>Cypripedium</i> Chryso	Leeanum × Antinous	Sir Geo. Holford.
<i>Cypripedium</i> Ella	Spicerianum × nitens-Leeanum Charles-Annum	H. T. Pitt, Esq.
<i>Cypripedium</i> Garland	Lord Wolmer × Hera Enlyades	Baron Schröder.
<i>Cypripedium</i> Garnet	Minos × Beryl	Sir Geo. Holford.
<i>Cypripedium</i> Golden Fleece	insigne-Sanderiae × Antinous	Sir Geo. Holford and R.
<i>Cypripedium</i> Golden Morn	San-Actaens × Mrs. F. Sander	Ashworth, Esq.
<i>Cypripedium</i> Hadrian	Leeanum × Beacon	Sander and Sons.
<i>Cypripedium</i> Isis	Robson × nitens	Sir Geo. Holford.
<i>Cypripedium</i> Joan	Lathamianum × Actaens-langleysense	H. T. Pitt, Esq.
<i>Cypripedium</i> Major Grant	Vandyke × Leeanum	Sander and Sons.
<i>Cypripedium</i> Mallard	Vandyke × illustre	Sir Geo. Holford.
<i>Cypripedium</i> Mavis	Alcibiades superbum × Merlin	Sir Geo. Holford.
<i>Cypripedium</i> Mrs. Grant	Ville de Paris × Fairieanum	Sander and Sons.
<i>Cypripedium</i> Nada	Helen H. × Earl of Tankerville	Sir Geo. Holford.
<i>Cypripedium</i> Radiant	Spicerianum × Titius	H. T. Pitt, Esq.
<i>Cypripedium</i> velatum	insigne × Evelyn Ames	Rev. J. Crombieholme.
<i>Cypripedium</i> Vesuvius	fulshawense × Beekmanii	Baron Schröder.
<i>Cypripedium</i> Walton Gem	Madame Jules Hye × Earl of Tankerville	W. Thompson, Esq.
<i>Laelia</i> Flaviana	flava × Jona	E. G. Mocatta, Esq.
<i>Laelio-Cattleya</i> Antinous	L.-C. Myra × C. Enid	Charlesworth and Co.
<i>Laelio-Cattleya</i> Domele	Dominiana × elegans-Turneri	Flory and Black.
<i>Laelio-Cattleya</i> Enoens	L.-C. Coronis × C. Enid	Stuart Low and Co.
<i>Laelio-Cattleya</i> Haddonii	L. Perrini × L.-C. luminosa	J. J. Neale, Esq.
<i>Laelio-Cattleya</i> Lywood	L. Jongheana × C. Lawrenceana	J. J. Neale, Esq.
<i>Laelio-Cattleya</i> Mornis	L.-C. Rubens-Lambeanae × C. Octave Doin	Charlesworth and Co.
<i>Laelio-Cattleya</i> Ruth Worsley	L.-C. luminosa × C. Ella	H. Worsley, Esq.
<i>Odontioda</i> Ada	Oda. Bradshawiae × Odm. Thompsonianum	Sir Jeremiah Colman, Bart.
<i>Odontioda</i> Marion Worsley	Oda. Bradshawiae × Odm. harvengtense	H. Worsley, Esq.
<i>Odontioda</i> Ramillies	Oda. Cooksoniae × Odm. ramosissimum	Sir Jeremiah Colman, Bart.
<i>Odontoglossum</i> Edna	harvengtense × Harryannum	J. and A. McBean.
<i>Odontoglossum</i> King Albert	Armstrongiae × crispum-Luciani	W. H. St. Quintin, Esq.
<i>Odontoglossum</i> Maid of Gatten	Adrianae × Othello	Armstrong and Brown.
<i>Odontoglossum</i> Mignon	Edwardii × Andersonianum-Queen Alexandra	Sir Jeremiah Colman, Bart.
<i>Odontoglossum</i> Mirella	amabile × Harryannum	Sir Jeremiah Colman, Bart.
<i>Odontoglossum</i> Mistral	mulus × crispum-Cooksonianum	Sir Jeremiah Colman, Bart.
<i>Odontoglossum</i> Ramses	ramosissimum × crispum	J. and A. McBean.
<i>Sophro-Laelio-Cattleya</i> Carona	S.-L.-C. Dorila × L.-C. Rubens	R. G. Thwaites, Esq.



The Week's Work.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

PILLAR AND FENCE ROSES.—Most gardeners endeavour to thin and secure the growths of Pillar Roses in the autumn, and this is decidedly the best method to adopt. If for any reason the work has not been done, it should be accomplished at once. The shoots should be freed entirely from the pillars and wires, and the old wood cut out wherever there is sufficient young growth to take its place. Rambling Roses vary considerably in habit, some—such as the beautiful Blush Rambler—making long, thick growths from the base. Here the elimination of old wood affords no difficulty. In every case endeavour to have the young wood distributed throughout the height of the pillar or fence. To have flowers only at the top of the plant points to bad pruning.

SALVIAS AND CALCEOLARIA.—Cuttings of *Salvia patens* and *S. splendens* may be inserted in a warm propagator filled with sand. *Salvia patens* will give a good display of flowers in the autumn, but there is not such certainty with *S. splendens*, for success depends to some extent on the character of the season. Both species may be raised from seeds, but more uniform plants are obtained from cuttings. Roots will develop very quickly, when the plants may be boxed up and subsequently potted. If suitable shoots are not available they may easily be obtained by growing the stock plants in a warm house with a moist atmosphere. Cuttings of *Calceolaria amplexicaulis* are usually rooted in the autumn and kept somewhat warmer than the old-fashioned shrubby *Calceolarias*, but a shortage of stock may be made good now by rooting cuttings in a warm propagating case in the same way as the *Salvias*. This plant makes a fine standard if well-rooted cuttings are potted in the autumn and kept growing in moderate warmth. Even if they have only commenced to form a head at the time of planting they will quickly develop in rich soil. In association with a groundwork of their own colour, or with pale blue flowers, they form a charming combination.

A TRIAL BORDER. A trial border is useful for determining the colours and height of the various plants and how the subjects may be best arranged. It may also include novelties that have been procured from the nurseries, or such as have been propagated at home, in order that we may know their exact behaviour in the local soil and climate. Flowers seen at a show, in a nursery, or in a friend's garden, may also be tested.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

DENDROBIUM. Some of the deciduous and semi-deciduous *Dendrobiums* will be showing their flower-buds, and the plants should be removed from their resting quarters to the *Cattleya* house, or one in which the night temperature does not fall below 55°. *D. nobile*, *D. aureum*, *D. crasinode*, *D. Wardianum*, *D. Ainsworthii*, *D. Cassiope*, and others of equal merit are producing flower-buds. For some time to come but little water will be needed at the roots, for it is only required to maintain the pseudo-bulbs in a plump condition. When the flower-buds are about to open, place the plants in a light position in a warm house. During the next few weeks examine the collection of *Dendrobiums* at intervals, selecting plants that are well-rooted, thoroughly ripened, and showing signs of flowering for placing in a little more warmth. The remainder of the plants should be afforded water if they require it, but watering must still be done in moderation. Certain of the late flowering species, such as *D. Bensoniae*, *D. Parishii*, and *D. superbum* are resting in the *Cattleya* house, suspended from the roof rafters. There they may

remain until the flower-buds appear, when they should be returned to the warmest division.

SEEDLING DENDROBIUMS.—Most of the seedling Dendrobiums which have not attained to a flowering size are beginning to make fresh growth. They readily form roots, and when these are visible they may be repotted or top-dressed. Small pans furnished with wire hangers are the most suitable receptacles. The wire, in addition to being used for suspending the plants from the rafters, will form a support for the new shoots and older pseudo-bulbs. The compost should consist of Osmunda-fibre and Sphagnum-moss in equal parts, with a liberal sprinkling of crushed crocks or coarse silver sand. Cut both the fibre and Sphagnum-moss into short lengths, and fill each pan one-third of its depth with drainage material. Grow the plants in a light position of the East Indian or seedling house, and afford water sparingly until roots are seen creeping over the edge of the pans. On bright days light spraying overhead with clear water will be beneficial.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

MANURING FRUIT-TREES.—Take advantage of frosty weather to wheel manure to the places where it is required in the fruit garden. Owing to the difficulty of obtaining animal manures, fruit-bearing trees and bushes are sometimes restricted in respect to manure, which is a mistake, and if persisted in the trees will eventually fall into an unhealthy condition. Bush fruits of all descriptions are greatly benefited by a good dressing of the best manure obtainable. If this is not procurable in sufficient quantity for requirements it should be supplemented by bone-meal, fish manure, or an artificially compounded fruit-tree manure. The system of keeping a smother fire always burning has much to recommend it, as all prunings, weeds and rubbish of all description can be burnt at once instead of being allowed to accumulate. The burnt ash contains potash and is valuable for mixing with manure, applied to the fruit quarters. Fruit trees that were planted recently and mulched lightly at the time of planting do not require more manure this season. It can be used to greater advantage amongst trees that have borne regular crops of fruit.

STRAWBERRY BEDS.—Plants in established beds that were cropped last season should be cleaned and put in order for the spring. Remove all weeds and fork the ground lightly; on no account use a spade for such work, as it would destroy many of the roots. Fill blanks in the rows with strong plants from the reserve bed, or, failing this, a few of the plants that were potted for forcing. The beds should be dressed freely with manure. The fertilising properties will be washed down to the roots by the winter's rains, and when the plants become active later they will immediately benefit by the food at hand and, growing vigorously, throw up an abundance of strong flower spikes. Young plants that have not fruited will not require this top-dressing of manure, provided the ground was well prepared and enriched before they were planted; but all should be made perfectly clean and neat. After severe frosts it is advisable to examine recently-planted beds, and press down firmly all plants that have been loosened by the action of the frost. The present is a good time to prepare for future planting of Strawberries. Trench the ground thoroughly and dig in plenty of manure as the work proceeds. Leave the surface of the soil in a rough condition for the present to expose it to frosts and the weather generally. If the ground is required for young plants in the spring it can be quickly brought into a friable condition for planting. On the contrary, if the plot is not likely to be required for Strawberries till August or September, the trenched ground will be of great value for a crop of early Potatoes, and the cultivation of these will bring the ground into excellent condition for the Strawberry plants, without the necessity of trenching during the pressure of summer work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

THE PROPAGATING HOUSE.—The propagation of various plants will soon need attention, and in order to facilitate the work when the time arrives, get everything in readiness. Thoroughly cleanse the propagating cases, as well as the house, and renew the plunging materials. If an ordinary hot-bed is used to furnish bottom-heat, prepare the materials of the hot-bed before placing them in the case. A mixture of Oak or Beech leaves and stable litter in equal parts makes a lasting hot-bed when properly prepared. The materials should be well mixed and thrown into a heap for a few days to ferment. Turn the heap at intervals of three or four days to allow the gases of fermentation to escape. At the end of a fortnight the hot-bed should be made. In the meantime, get ready a quantity of soil consisting of loam, leaf-mould, and coarse sand in suitable proportions, and arrange it in a warm place. The compost should be passed through a $\frac{1}{4}$ -inch sieve.

CLERODENDRON FALLAX. Sow seeds of *Clerodendron fallax* to obtain plants for flowering in late summer and autumn. Sow the seed singly in 2½-inch pots filled with sandy compost. After sowing, water the soil and plunge the pots in a propagating case until the seeds germinate. Cover the pots with glass and keep the pan shaded until the seedlings appear. At that stage remove the pots to a shelf near the roof-glass in a house having a warm, moist atmosphere. Syringe the foliage with rain-water twice daily as a precaution against attacks of red spider, which is a troublesome pest. A stock may also be raised from cuttings, or the old plants may be shaken out and repotted. Specimens with four or five heads of flowers may be obtained in this manner. Plants in 6-inch pots should be shifted into receptacles 3 inches in diameter. A suitable compost is formed of good fibrous loam, leaf-mould, manure from an old mushroom bed, wood-ash and coarse sand.

EUPHORBIA PULCHERRIMA (POINSETTIA).—When these plants have passed out of flower they should be rested before placing them into heat to produce cuttings. Gradually withhold water from the roots for a week or two, then place the pots on their sides beneath a stage in a house having a temperature of about 50°.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. Lord North, Wroxton Abbey, Banbury, Oxfordshire.

HORSERADISH. The roots should be lifted, the best stored for use, and the small, straight roots selected for replanting. Thoroughly trench the soil, placing a layer of manure at the bottom. Plant in rows made at 1 foot apart, allowing a distance of 9 inches between the sets, which should be buried several inches beneath the surface. It is essential thoroughly to free the soil in which Horseradish was grown of all particles of the old roots, or the new sets may be smothered with their growth later.

LONGPOD BEANS.—Make a sowing of long-pod Beans when the soil and weather are suitable. Sow in shallow trenches made about 1 foot wide and 3 feet apart; the trenches may be made with a hoe. Place the Beans in a double row at 3 inches apart each way, and set them 2 inches deep. The sides of the trenches will afford protection from cold winds. When the soil is cold and wet these Beans should be sown in boxes, as advised on p. 35.

TOMATOS. Make another sowing of Tomatos, treating this batch as previously advised for the earliest sowing. If sown on warm borders good results are obtained by planting two or three seeds at the appointed stations, thinning the seedlings singly and top-dressing the roots as required. The earliest plants are ready for transferring to 3½-inch pots, the only intermediate shift necessary. When well-established they may be placed in the fruiting pots or borders, using a moderately rich compost mixed with a

goodly proportion of wood ash. If pots are used but little drainage is necessary. Place the plants at a good depth in the pots, half filling the latter with soil, thus allowing room for subsequent top-dressings.

ASPARAGUS.—Take advantage of frosty weather to wheel manure to the Asparagus beds, which should be well covered with the dung. In coast districts seaweed may be advantageously applied. Complete the carting of manure to vacant sites, endeavouring to relieve, if possible, the inevitable pressure of work in early spring.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady Nunburnholme, Warton Priory, Yorkshire.

POT FRUITS. Those who have the convenience to grow a score or two of Peaches and Nectarines in pots may defer closing the permanent house until after the turn of the year. When judiciously managed it is surprising the quantity of choice fruits pot trees will produce. Some fruits, as a matter of course, force better than others, but there are few kinds which, if properly prepared and treated with care, will not yield fruit earlier than, and superior to, the best obtained from walls in the open air. Taking Peaches and Nectarines first, there is no need to start the trees before the middle of December or early in January to obtain ripe fruits in May and early June from such varieties as Duke of York, Duchess of Cornwall, and Peregrine among Peaches, and Cardinal and Early Rivers amongst Nectarines. Trees brought indoors last month may be afforded a little more warmth through the early part of the day, especially in fine, mild weather, but no change should be made in the night temperature until the trees come into flower. Just before the buds burst fumigate the house twice lightly on alternate nights to ensure immunity from aphids while the fruits are setting. Choose a mild night for the work; let the trees be dry and the house cool and close, taking the precaution to syringe the trees well with clear water the following morning. Peaches always set best with a free circulation of fresh, warm air, which favours the ripening and dispersal of the pollen. Dust the blooms each day with a rabbit's tail, and use a little less moisture at this stage, especially in wet or foggy weather. From this time onwards the day temperature may range about 60°, and about 50° at night, more or less, according to the weather. Pay careful attention to watering the roots, taking care not to overwater, for the roots will not need much moisture until the trees commence to grow freely.

THE ORCHARD HOUSE. At this date the orchard house may be closed, the pots and trees cleansed, and arranged in position. A mixed orchard house will furnish good crops of fruit without the use of much fire-heat. With the slight protection the house affords, the buds are sure to be in advance of similar varieties out-of-doors, and when this stage is reached, retarding is at an end, and a temperature suitable to the opening of the flowers and setting of the fruit must be maintained. As the buds swell the trees may be gently syringed once during the forenoon of bright, dry days. During wet or foggy weather damping of the floors will suffice to promote suitable atmospheric moisture. Insect pests must be sought for and checked as the buds show signs of expanding, and this is especially necessary in the case of Cherries and Plums. These fruits should be arranged at the cooler end of the house, and no attempt should be made to force them. The secret of success with these trees lies in preventing a high temperature or close atmosphere when the weather is fine, and in not permitting the thermometer to fall below 40° when the weather is very cold. The finest varieties of Cherries and Plums may be grown in pots; few trees give more pleasure when in flower, and Cherries especially produce choice fruit at a time when it is most appreciated. Pears and Apples produce fruit of superb flavour under glass when not forced too much in the early stages.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations. The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR FEBRUARY.

TUESDAY, FEBRUARY 1—
Soc. Hort. Assn. meet.
WEDNESDAY, FEBRUARY 2
B.G.A. Executive meet.
FRIDAY, FEBRUARY 4—
Roy. Gardeners' Orphan Fund Annual meet. and Election of Candidates at Simpson's Restaurant, Strand, Royal Inst. (Lecture by Prof. W. Bateson, on "Mendelism.")
TUESDAY, FEBRUARY 8—
Roy. Hort. Soc. Coms. meet. Ann. meet. 3 p.m. B.G.A. (Leeds Branch) meet.
WEDNESDAY, FEBRUARY 9
Sheffield Clays. Show and Lecture Roy. Soc. of Arts meet. (Lecture at 4.30 by Professor J. A. Fleming, D.Sc., F.R.S., on "The Organisation of Scientific Research.")
THURSDAY, FEBRUARY 10—
B.G.A. (Watford Branch) meet.
MONDAY, FEBRUARY 14—
United Hort. Ben. and Prov. Soc. Coms. meet.
THURSDAY, FEBRUARY 17—
Linnæan Soc. meet at 5 p.m.
SATURDAY, FEBRUARY 19
Lancaster Hort. Soc. meet. (Lecture on Carnations.) B.G.A. (Leamington Branch) meet.
TUESDAY, FEBRUARY 22—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
TUESDAY, FEBRUARY 29
Royal Inst. (Lecture by Dr. E. J. Russell, on "The Plant and the Soil.")

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.5.

ACTUAL TEMPERATURE:
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, January 27 (10 a.m.) Bar., 30.2 Temp., 51 Weather, Dull.

SALES FOR THE ENSUING WEEK

MONDAY, WEDNESDAY, AND FRIDAY
Dutch Bulbs, Liliums, Gladioli, Begonias, etc., at 12, Herbaceous Plants, Shrubs, Roses, Palms, Azaleas, etc., at 1.30, by Protheroe and Morris, at 67 and 68, Cheapside, E.C.
MONDAY AND WEDNESDAY
Rose Trees, Shrubs, Perennials, &c., at Stevens's Rooms, King Street, Covent Garden.
WEDNESDAY—
2,095 cases of Japanese Liliums, at 3, by Protheroe and Morris.
THURSDAY
Roses, by Protheroe and Morris, at 1.
FRIDAY
Orchids, by Protheroe and Morris, at 1.

Winter-flowering Begonias.

Most of our readers are aware that to Mr. John Heal, of Messrs. Jas. Veitch and Sons, belongs the honour of raising the relatively new winter-flowering Begonias which are now so widely grown.

The story of the origin of this race is well known. The bulbils of one of the parents, *Begonia socotrana*, were introduced from the island of Socotra, and plants were raised at Kew, where their possibilities attracted the attention of Mr. Heal. *B. socotrana** is itself a noteworthy plant, with large, peltate, bright-green leaves and flower scapes rising well above the foliage, bearing clusters of rose-coloured flowers on slender pedicels. The flowers, moreover, are produced successively over a considerable period of time.

B. socotrana may be propagated by means of its bulbils, which are borne in small clumps in lieu of the tubers characteristic of the Andean species.

According to *Hortus Veitchii*, the first

hybrid "Autumn Rose" was produced by crossing *B. socotrana* and the American species *B. insignis*. The hybrid flowered in 1882, but was not distributed, and was soon lost.

Mr. Heal met, however, with great success in his next attempt, which resulted in the production of the variety bearing his name. It was produced by crossing *B. socotrana* (female) with the bright-coloured tuberous variety, *Viscountess Doneraile*. It is said that only one seed germinated, and hence the whole stock of John Heal is the produce of a single plant. Though this variety has been surpassed in size of flower by later productions, it is still popular, and worth cultivating by reason of its profusion of bright carmine flowers.

Agatha, the next variety raised by Mr. Heal, is interesting in that it resembles *Gloire de Lorraine* in habit and colour of flower. As is well known, *Gloire de Lorraine* was produced in 1891 by Lemoine, of Nancy, by crossing *B. socotrana* and the white-flowered *B. Dregei*. In the case of Agatha, the parents were *B. socotrana* and *B. nitida*, and the plant represents a type intermediate between the ordinary winter-flowering *Begonia* and the ever-popular *B. Gloire de Lorraine*.

Turnford Hall, the white sport from *Gloire de Lorraine*, arose with Messrs. T. Rochford & Sons, and is interesting as showing the segregation of the white colour of one of the parents. Other derivatives, presumably vegetative sports (for *Gloire de Lorraine* is generally, if not always, sterile with its own pollen), are: *Amabilis*, a bold form with large flowers, somewhat late; *Glory of Cincinnati*, larger in all parts than the type; *Rochfordii*, with flowers more red than those of *Gloire de Lorraine*. It would be interesting if someone with the necessary leisure would bring together the known details of the origin of these varieties of this most graceful and popular of Begonias.

To return to the other section of winter-flowering Begonias: among other attempts by Mr. Heal was the cross *B. socotrana* by *B. semperflorens*, which, however, did not lead to results of horticultural value; on the contrary, hybridisation by this expert gave us in succession *Adonis*, *Winter Gem*, *Ensign*, *Ideal*, *Success*, *Mrs. Heal* and others. In most of these the flowers are carmine or rose, and are single. In 1911 Messrs. Veitch exhibited several new varieties which show in habit, foliage, and size of flower a much nearer approach to the tuberous-rooted type than do the hybrids already mentioned. The first of this series were *Acquisition* (salmon-pink), *Exquisite* (rose-pink), and *Her Majesty* (rich coppery orange). A little later *Fascination*, with bright orange-salmon coloured flowers, was exhibited. In the following year appeared, also from the same source, *Emita*† (orange scarlet) and *Optima* (clear salmon).

All the above-mentioned have received awards of merit. Messrs. Clibran, although not so early in the field, have been remarkably successful in producing double and semi-double varieties. Of these, note-

worthy races are *Eclipse*‡ (salmon-red), *Lucy Clibran* (orange suffused with rose), *Scarlet Beauty*§ and *Splendour* (bright crimson). The group staged by Messrs. Clibran which contained these novelties attracted much attention on account, not only of the doubleness of the flowers, but also on account of the wide range of colour which these varieties possess.

More recently this firm has distributed other charming forms, e.g., *Britannia* (rich crimson), *Flambeau* (orange-scarlet) and *Pink Perfection*.

When first introduced it was supposed that *B. socotrana*, being a native of a land with a warm climate, would require a temperature of at least 65 degrees; but it was soon found that the plant does better in a lower temperature (55 to 58 degrees), and that in these cooler conditions the flowers last longer and the plants are freer from insect pests. At this temperature the "mite" is easily kept in check by fumigating every third week with a nicotine compound. After flowering, the plants rest; but they should not be taken out of their pots nor be allowed to become quite dry. They require just enough moisture to keep their roots plump. During the resting period from January to March they should be kept in a house with a minimum night temperature of 50 degrees. At the end of March, when the plants begin to throw up fresh growths, the house should be fumigated and more water should be given than during the resting period. When they have made from half an inch to one inch of growth, the plants may be repotted. It is important to remember that winter-flowering Begonias differ from the tuberous rooted in this respect; for if the former are repotted before they have started into growth the plants suffer a severe check. The young shoots which appear in the leaf axils may be taken as cuttings. If the cuttings are put in pots in a temperature of 65 to 70 degrees they will root quickly, provided care is taken to avoid over-watering and to prevent condensation of moisture on the leaves. When about six inches high the points of the earlier cuttings should be pinched in order to promote sturdy growth. The first cuttings may be taken when the young growths are about two inches long. This will usually be about the middle of May, and the process of taking cuttings may be continued until August.

The plants flower well in four, six, or seven-inch pots. Though they require a fairly moist atmosphere during the summer, it is important that the air of the house should be kept circulating night and day. Plants in flower should not be syringed, and in summer shading from bright sunshine is necessary.

A compost of two parts loam, one part good leaf-mould, and a liberal sprinkling of silver sand suits the plants well, and in potting, the soil should be pressed down only moderately firmly. To prevent eel-worm from attacking the plants the compost may be sterilised.

† See coloured plate, *Gard. Chron.*, June 27, 1914.
§ See coloured plate, *Gard. Chron.*, Jan. 9, 1915.

* See *Gard. Chron.*, Nov. 1, 1913, fig. 112.

† See coloured plate, *Gard. Chron.*, Nov. 1, 1913.

PHLOX DOUGLASII (see fig. 29).—This species of Phlox is of dwarfer, more compact habit than those of the subulata section, forming compact tufts of thickly interlaced stems covered with stiff, slender leaves. It is one of a set of dwarf-growing species found on the Rocky Mountains, which includes *P. caespitosa*, *P. canescens*, *P. bryoides* and *P. Hoodii*, all desirable plants, but not all yet in cultivation. *P. Douglasii* is found on both the eastern and western sides of the Rocky Mountains growing in dry, rocky ground on bare summits, and varies considerably both in the size and colour of its flowers, ranging from shades of purple to lilac and white. Those with the darker flowers are smaller, with somewhat greener foliage, while in the variety *diffusa* the pale lilac flowers are much larger and borne on plants of a laxer habit. The variety illustrated in fig. 29 is of intermediate character, very compact in habit, clothed in April and May with good-sized flowers of a lilac shade. To grow the plant successfully it should be planted in well-drained soil of a stony nature, with a large, flat stone laid over the roots to keep them cool in summer. The species forms an ideal pot plant for the Alpine house, on account of its neat habit and free-flowering qualities. The best means of propagation is by cuttings inserted in early summer; seeds are but sparingly produced. The dwarf, low-growing Phloxes of the subulata section, known as Moss Pinks, are valuable plants for spring flowering, and are useful either in the border or rock garden.

BOARD OF AGRICULTURE APPOINTMENTS.—The President of the Board of Agriculture and Fisheries has appointed Sir JAMES J. DONNELL, F.R.S., and Mr. J. R. CAMPBELL, B.Sc., of the Department of Agriculture and Technical Instruction for Ireland, additional members of the Departmental Committee which is making arrangements with a view to the maintenance, so far as possible, of adequate supplies of fertilisers for the use of farmers of the United Kingdom. Mr. H. CHAMBERS has been appointed Secretary to the Committee vice Mr. H. D. VIGOR, resigned.

NATIONAL CHRYSANTHEMUM SOCIETY.—The members of the Floral Committee of the National Chrysanthemum Society met at their annual supper at the Old Burton, Cheapside, London, on the 19th inst., when Mr. D. B. CRANE presided.

NATIONAL DIPLOMA IN HORTICULTURE.—The 1916 examinations for the National Diploma in Horticulture will be held in June next. The examinations will be partly written, partly practical, and partly viva voce. Entries for the qualifying test must be received not later than March 2, and for the preliminary and final examinations not later than March 10. Application forms for registration and forms of entry will be sent by the secretary, R.H.S., Vincent Square, Westminster, S.W., on receipt of an addressed foolscap envelope, stamped 2d.

ROYAL GARDENERS' ORPHAN FUND.—The annual general meeting of the subscribers to this fund will be held at "Simpson's," Strand, on Friday, February 4, at 3 p.m., for the purpose of receiving the report of the committee and statement of accounts for the past year; to elect officers for the ensuing year; to elect sixteen children to the benefits of the fund; and to transact such other business as may arise. In view of the unfortunate conditions arising out of the war, the committee have wisely decided to recommend the election, at the ensuing annual general meeting, of sixteen out of a list of twenty-two candidates, and to elect them by resolution instead of by taking a poll, which will save much expense. The committee has compiled the list by including the six unsuccessful candidates at the previous election, one each where two members of a family have been nominated, and two single nominations.

JAMES JEFFREY.—The late JAMES JEFFREY, whose death was announced on p. 41, was a native of Berwickshire, and served his apprenticeship in a nursery at Berwick-on-Tweed. He was afterwards engaged as an under gardener at Clovenfords Vineyards. From Clovenfords he was appointed gardener to THE CAMERON OF LOCHIEL at Achencarry Castle, Inverness-shire, and from Achencarry he went to the South of Scotland as gardener at Craigeleuch, Langholm, Dumfriesshire. Mr. JEFFREY was then appointed gardener to W. T. CRAWSHAW, Esq., at Cyfarthfa Castle, South Wales. Later, at the request of Mr. CRAWSHAW, he took charge of that gentleman's newer gardens at Caversham Park, Oxfordshire. His next appointment was as gardener to the Earl of HAREWOOD at Harewood House, Yorks, where he remained for some time, and did much valuable work. Here he flowered *Amherstia nobilis* within three years of importation, and effected in a brilliant way the renovation of the famous Harewood vine, a Muscat of Alexandria. Leaving Yorkshire, Mr. JEFFREY was engaged at St. Mary's Isle, Kirkcudbright, where he succeeded Mr. HAMILTON as gardener to the Hort family, in whose service he spent the

on 21 days each. The wettest day of the year was October 31, when 1.56 inch of rain was registered, but May 17 ran this close, with 1.48 inch.

"BOTANICAL MAGAZINE."—The following plants are illustrated, and described in the issue for January:

ERIA ORNATA, tab. 8,642. This Orchid was originally known as *Dendrolirium ornatum*, but the genus was treated by LINDLEY as a section of *Eria*. *Eria ornata* grows wild in Sumatra, Borneo and Java, and has been met with in Siam. The plant is of robust growth, possesses large, coriaceous leaves, and striking spikes of flowers, the orange-red bracts that subtend the brownish-grey flowers being very conspicuous.

RHODODENDRON ERUBESCENS, tab. 8,643. This pale pink *Rhododendron* is one of a group of some forty closely-allied species belonging to the section *Eurhodendron*. It was introduced to this country by Mr. E. H. WILSON during his first visit to China, and specimens raised from seeds sent by that collector have flowered at Coombe Wood and Kew Gardens. The plant is perfectly hardy, but the blooms are apt to be injured by late frosts.



[Photograph by W. Irving.]

FIG. 29.—PHLOX DOUGLASII: COLOUR OF FLOWERS RANGING FROM PURPLE THROUGH LILAC TO WHITE.

last sixteen years of his life. He is survived by three sons and four daughters. His eldest son, JAMES, is gardener at Lowther Castle to the Earl of LONSDALE, while his second son, JOHN, is gardener to Sir R. W. BUCHANAN-JARVIS, Bart., Castlemilk, Lockerbie.

WAR ITEMS.—Private WILLIAM OLIVER MILLER, Highland Light Infantry, who has received the D.C.M. for valour in action, is the eldest son of Mr. JAMES MILLER, nurseryman, Berdlands, Rutherglen.

—Private GEORGE MUIR, 1st Black Watch, is officially reported as killed on January 2. Before the war he was gardener at Glenlochsee, Glenshee.

RAINFALL IN 1915.—Mr. W. BROOKS, Blackdown House Gardens, Sussex, informs us that the total rainfall registered there during 1915 was 41.51 inches. Rain fell on 152 days, the wettest month being December, during which rain fell on all but six days. The driest month was June, with only six days on which any rain fell, April and September coming next, with seven each. In January and February rain fell

CHRYSANTHEMUM FOENICULACEUM, tab. 8,644.—This plant is a native of the steep rocky valley of Tenerife known as Barancos, and it is interesting that there is another *Chrysanthemum* closely related which grows on the upland rocky plain known as The Cañadas at about 8,000 feet elevation. It has been suggested that the two plants are only varieties of the same species, although they differ in certain respects, and are distinct for horticultural purposes. In cultivation the names have been misapplied, and *C. foeniculaceum* has been grown in this country for 25 years under the name of the other species. *C. foeniculaceum* forms a shrublet 2.5 feet high, and bears numerous Marguerite-like flowers. It is a suitable plant for the conservatory and summer bedding.

FUNKIA LANCEOLATA VAR. TARDIFLORA, tab. 8,645.—The Funkias are useful garden plants, and the one under notice has the value of blooming from the end of September until well into November. The species which flower in July is a native of Japan, but the origin of the late flowering variety is obscure. The flowers are borne in a dense globular head, and are pale lilac in colour.

POUR NOS AMIS FRANÇAIS ET BELGES.

CHRONIQUE SPÉCIALE (LXIV).

L'AVENIR HORTICOLE DE LA BELGIQUE.

L'HORTICULTURE belge trouvait en Allemagne une clientèle importante pour l'excès de sa production. Malgré l'extension de ses agglomérations urbaines et de ses centres industriels, avec leur débouché important pour les fleurs, légumes et fruits, la Belgique horticole se trouvait de plus en plus sous la dépendance des marchés extérieurs. Plus que tous autres, ceux de l'Est lui étaient avantageux, grâce aux faibles approvisionnements locaux, aux communications rapides et à un tarif douanier qui, tout en faisant sentir ses effets, n'était cependant pas prohibitif.

Les régions fruitières de Herve, de Looz et de Tongres, le Brabant viticole, le pays maraîcher de Malines, les cultures horticoles des environs de la capitale, de Gand et de Bruges expédiaient en Allemagne des quantités élevées de Pommes, Poires, Raisins, Pêches, Fraises, Tomates, Pommes de terre, Choux-fleurs, Asperges, Epinards, fleurs coupées et plantes. On n'est pas sans appréhension, dans certains milieux, au sujet de la situation qui sera faite aux horticulteurs belges après la guerre. D'aucuns craignent que le débouché allemand ne soit perdu pour la Belgique et que l'orientation du commerce vers l'approvisionnement d'autres pays ne soit une source sérieuse d'embarras, car elle ne pourra se faire bien souvent sans une transformation radicale des procédés de culture suivis jusqu'à présent.

Pour ce qui nous concerne, nous ne sommes pas pessimistes sous ce rapport. Il n'est pas douteux que les conditions du commerce de la Belgique avec les pays alliés seront améliorées par des mesures prises par les gouvernements respectifs. Beaucoup de producteurs et d'exportateurs seront amenés à étudier davantage les marchés anglais, français, russe, américain, et dès à présent, certains intéressés ont réuni une documentation importante au sujet du trafic avec ces débouchés. Mais nous croyons que malgré les événements qui se déroulent depuis dix-huit mois, l'Allemagne continuera à acheter une bonne partie de la production horticole belge.

Si les Allemands tiennent à boycotter les horticulteurs Belges après la guerre, il faudra qu'ils assurent eux-mêmes la production des fruits, légumes et fleurs qui, jusqu'à présent, leur venaient de l'étranger, ou bien qu'ils restreignent, dans une mesure notable, l'usage de ces produits. Cette seconde hypothèse ne paraît pas pouvoir se réaliser car toute l'histoire économique de la guerre a montré que l'article horticole est moins affecté par les crises qu'on ne l'avait craint jusqu'à présent. Quant à la limitation par principe, de la consommation, nous ne croyons pas à une mesure aussi héroïque.

Reste le développement de la production indigène qui automatiquement contrecarrerait l'importation. A notre sens il ne faut guère s'y arrêter.

L'étranger, en particulier la Belgique et la Hollande, a une avance considérable pour la production des fruits et des légumes. Par des mesures de protection, le gouvernement allemand pourrait songer à rétablir l'équilibre; mais il y a lieu de ne pas perdre de vue qu'il s'agit, en l'occurrence, d'articles alimentaires, d'un usage courant, et que la consommation, représentée par les grandes villes et les centres industriels, ne se laissera pas imposer lourdement pour assurer une vie artificielle à certaines catégories de producteurs. Ces impositions ne seraient au surplus pas de nature à mettre un terme à l'importation, car lorsque l'article est disponible, il

faut que l'on s'en débarrasse, fût-ce à perte. N'oublions pas de plus que, lorsque la paix interviendra, les intérêts économiques des diverses nations ne seront pas perdus de vue. Pour notre part, nous trouvons légitime qu'un pays prenne des mesures de protection raisonnable, mais nous applaudirions cependant à des stipulations rendant impossible l'établissement de droits "prohibitifs" qui peuvent profiter à quelques uns mais nuisent à la masse de la population indigène aussi bien qu'au fournisseur étranger.

On se fait de plus en plus à l'idée qu'un pays, pour être prospère, ne peut tendre à être absolument indépendant de ses voisins. Bien plus, la prospérité nous paraît exiger comme condition sine qua non que ce pays produise ce que sa situation économique lui permet de produire à un prix plus avantageux qu'ailleurs. L'argument sentimental ne convaincra pas les Allemands; le plaisir de boycotter ne leur fera pas abandonner ces sphères de leur activité économique où ils croient être les maîtres, pour s'engager dans d'autres domaines très aléatoires. Et s'il est incontestable que dans certaines spécialités horticoles ils sont parvenus à faire leur chemin, il en reste cependant beaucoup d'autres où ils resteront tributaires de leurs voisins. Non, les producteurs de fruits de la Hesbaye, les forceurs de Hoeylaert, la maraichers de Louvain et de Malines, les horticulteurs des Flandres ne perdront pas leur clientèle allemande, à moins qu'eux-mêmes n'estiment qu'ils en trouvent une meilleure dans d'autres pays!

Et ce qui se passe actuellement en Belgique occupée confirme absolument cette opinion. L'administration allemande s'est trouvée heureuse de pouvoir disposer de la récolte des Pommes de terre hâtives de la région malinoise, un service spécial avait même été organisé pour le transport en Allemagne. Plus tard, l'Obstzentrale fut créée avec mission de réserver à l'Allemagne toute la production belge de fruits et de légumes. Nous avons relaté ici même les mesures auxquelles ce service a eu recours pour faire apprécier en Allemagne des produits belges tels que la Chicorée-Witloof, peu connus dans certaines villes. Elle a répandu davantage la réputation de la production horticole de la Belgique, et après la guerre la consommation allemande ne demandera pouvoir s'approvisionner en Belgique. S'il en fallait d'autres preuves, il suffirait de rappeler les appels réitérés des Allemands aux intermédiaires neutres pour en obtenir des produits horticoles, et l'emploi courant de fleurs du Midi, article non indispensable. Si le trafic continue en temps de guerre, sera-t-il arrêté après la conclusion de la paix?

NOUVELLES DIVERSES.

AUX HALLES CENTRALES DE PARIS.—Nous avons signalé les mesures prises par la Préfecture de police à Paris en vue de mettre fin au régime du "regret." Les approvisionneurs protestent contre la réglementation, tout en se déclarant adversaires du commerce des regrattiers. Vendredi dernier, une réunion de protestation a eu lieu au Palais des Fêtes. Des orateurs y ont fait ressortir que l'arrêté était de nature à apporter de graves perturbations dans l'agriculture nationale en même temps que dans l'approvisionnement de la ville de Paris. Un ordre du jour demandant le retrait des prescriptions fut adopté à l'unanimité de l'assemblée, composée d'approvisionneurs et de cultivateurs des environs de Paris.

L'IMPORTATION DE FRUITS EN GRANDE

BRETAGNE.—Les frêts montent de façon alarmante et le gouvernement britannique s'occupe de réduire les achats à l'étranger. Alors que le tonnage disponible est réduit dans des proportions énormes, tant de bateaux étant requis pour les transports militaires, la demande pour la consommation ordinaire d'a pas diminué.

Les journaux annoncent que bientôt l'importation des produits de luxe sera limitée, de façon à rendre disponibles un certain nombre de bateaux. L'effet sur les tarifs de transport serait d'autant plus sensible que la plupart de ces produits prennent une place énorme dans les cales. La mesure frapperait en particulier les fruits, dont les envois sont considérables. Elle paraît cependant devoir rencontrer de vives résistances de la part des commissionnaires dont les opérations sont avant tout basées sur l'importation.

En l'absence de détails il est impossible de dire si la règle sera générale et s'appliquera aussi aux pays alliés. Parmi les neutres l'Espagne et l'Amérique seraient particulièrement frappées, car ce sont les grands fournisseurs de Raisin, Oranges, Pommes. La prohibition ne s'appliquerait pas aux Bananes, parce que la valeur alimentaire de ce fruit serait particulièrement appréciée. Nul doute que la lutte contre la "Banane" qui fut menée auparavant dans certains milieux, n'y trouve une recrudescence d'activité, et dès à présent nous relevons dans la presse des appréciations commentant peu favorablement l'exception faite, parce que la Banane devrait être considérée comme un article de luxe de la classe populaire, qu'il n'y a pas lieu de soustraire la campagne pour la limitation des dépenses.

LES PREMIÈRES FRAISES.—Il y a quelques jours les Fraises nouvelles ont fait leur apparition au marché de Covent Garden. Contrairement à l'usage établi au Continent, ces fruits sont vendus au poids. L'emballage est moins soigné, le producteur se contentant de présenter les fruits pêle-mêle, sur un lit de feuilles, dans les petites boîtes de bois coupé.

LES FRUITS DU CAP.—Les arrivages récents sont assez abondants et renferment de beaux fruits; malheureusement beaucoup ont souffert du transport. La demande est peu active et les Pêches s'obtiennent qu'à des prix moins élevés que de coutume.

KORT OVERZICHT VOOR DE VLAMINGEN.

WELEENS wordt de vrees nitgedrukt dat de Belgische Tuinbouw zijn afzet zal verliezen dien hij vroeger in Duitschland vond. In onze oogen bestaat daar geen gevaar voor.

België en Holland hebben een onbetwistbaren voorsprong in zake fruit-en groentenvoortbrengst en zelfs inkomrechten zijn niet voldoende om dien voorsprong te doen inhalen. Ook zullen de Duitschers waarschijnlijk gelukkig zijn voort te gaan voedsel uit België te trekken.

Er zou spraak zijn den invoer van fruit in Engeland te verbieden: men verlangt min in den vreemde te koopen en tevens meer schepen beschikbaar te stellen voor ander vervoer.

Amerika en Spanje zouden vooral door den maatregel getroffen worden. Voor Bananen wordt van een uitzondering gesproken, wat echter niet zonder tegenstand schijnt aangenomen te zullen worden.

Aardbeien werden over eenige dagen in Covent Garden te koop geboden. Kaapvruchten zijn wel beschikbaar en niet duur.

RHODODENDRONS AND LIME.

"We went especially after seed of an especial *Rhododendron*, a species of rare beauty, and the only one I have so far not seen on limestone."

The horticultural mind is naturally conservative, and gardeners are apt to frown on any sudden departure from the tenets of tradition, so that notwithstanding the classic example of a limestone *Rhododendron* furnished by that old garden plant, *R. hirsutum*, the suggestion that *Rhododendrons* grow naturally on limestone in any part of the world is sure to be met with incredulity.

No one, however, can have taken much interest in the literature of the flora of Western China without noticing the frequent association of *Rhododendron* with limestone; indeed, the two are associated so often as to leave the impression that the natural conditions under which many species of *Rhododendron* and *Azalea* grow in that country are calculated to modify one of the prime beliefs on which horticultural folk have been nurtured for so long.

It is known that limestone enters largely into the geological formation of Western China, and that it is particularly in evidence in the mountain ranges of Yunnan and Szechuan, on which *Rhododendrons* are abundant; this is an unusual state of affairs, and in seeking for some explanation of it the gardener will doubtless arrive at the conclusion that in the course of centuries a deposit of humus has formed on the rock, of sufficient depth for the shrubs to root in. At the elevation at which the *Rhododendrons* occur (8,500-14,000 feet), the rainfall must be considerable, and in the process of time the formation of acid humus, even on limestone, would follow, of course within the limits of vegetation.

Henry has observed that *Rhododendrons* grow magnificently at Clonbrock in Co. Galway, in the acid humus of an old Oak wood on limestone rock, and that in the most typical limestone area in Ireland, to wit, Burren, in Co. Clare, ericaceous plants flourish in the surface humus. E. H. Wilson tell us that the speciality of Wa-Wu-shan, "a gigantic upthrust of hard limestone 9,200 feet high," is the abundant carpet of *Sphagnum*-moss on the summit, and that this moss also occurs on the sister mountain, Wa-shan, as well as virtually on all the other members of the Laolin range on the Tibetan border at from 8,000-11,500 feet. It is not to be supposed that the moss is in actual contact with the rock, but the climatic conditions favourable to the growth of *Sphagnum* in such circumstances would be conducive to the formation of acid humus, as well as, *inter alia*, the wonderful wealth of *Rhododendron* of which we hear so much.

Assuming the presence of humus, the conjunction of *Rhododendron* and limestone is not so fantastic as it may have appeared at first glance; and if the humus is not always present, and *Rhododendrons* are found growing in physical contact with the limestone, botanists, plant physiologists and gardeners alike will be faced with a problem of extraordinary interest.

Doubts that will naturally arise on the subject can only be cleared up by those who have botanised in the regions concerned, and till quite lately there has been a tantalising reticence with regard to the point on the part of those qualified to deal with it. One may search the published writings of the few men able to speak from first-hand knowledge, without finding any direct reference to it. Neither David, Delavay nor Farges seem to have touched upon the question, nor so far as the writer has been able to ascertain has Henry dealt with it. In *A Naturalist in Western China* the intimate association of *Rhododendron* and limestone is not discussed, though it is clear from the context that many

of the *Rhododendrons* Wilson described so well were found on limestone. For instance:—

"How the *Rhododendrons* find a foothold on these wild crags and cliffs is a marvel. . . . Beneath them *Sphagnum*-moss luxuriates. On bare exposed cliffs I gathered two diminutive species of *Rhododendron*."†

The Land of the Blue Poppy brings us no nearer an authoritative pronouncement. Helmsley and Dunn, too, had nothing to say about it, nor had Breitschneider or Diels. In *Plantae Davidianae* the subject is ignored, and Franchet does not appear to have touched upon it elsewhere; in *Plantae Wilsonianae* there is no reference to lime in connection with *Rhododendrons*, nor is there in *Plantae Forrestianae*.

It is only in the present year that some light has been thrown on the subject, fittingly enough by the latest recruit to the small band of botanical explorers of Western China, the man whose words stand at the head of this article.

Objection may properly be taken that Farrer's words do not definitely exclude the presence of humus, and while that is so in the particular instance, he tells us later on that:—

"For awhile we stood pondering on the wide heath bed, with a great glossy-leaved tree *Rhododendron* springing everywhere in seedlings from the fine limestone shingle. . . ."

So much for all that seems as yet to have found its way into public print on a matter of considerable importance to horticulture. It is little enough and rightly will not be sufficient to convince the cautious reasoning cultivator; he will need further evidence from an authoritative source, and it is to hand, for recently the return of Forrest from his last expedition has made it possible to address a direct question on the subject to an authority second to none. His answer is best given in his own words:—

"Since my first journey to the Yunnan Highlands I have done my utmost to impress upon growers the fact that the *Rhododendrons* of that particular region do grow on and in limestone. The roots of the majority of the species certainly penetrate the rocks, though not all. I have secured photographs which would be of great assistance in proving what I say."

This is definite enough, but it may be objected that there is lime and lime, and it does not necessarily follow that *Rhododendrons* from the limestone mountains of Western China will flourish in English gardens, where lime usually takes the form of chalk, and less often that of oolitic limestone; moreover, in a matter of this kind, nothing short of actual experiment is likely to convince cultivators on a point as to which they will naturally entertain a good deal of scepticism.

To assist in elucidating the question, in the course of last year Professor Bayley Balfour kindly sent the writer a set of seedlings of various Asiatic species of *Rhododendron* for trial in calcareous soil. These were planted in August, 1914, in the naturally calcareous ground of a garden on the chalk hills of East Berkshire; the proportion borne by the chalk to the whole of the soil in the bed is not at present known, but it is obviously considerable, and in order to leave no loophole for doubt more has been added.

The experiment has been in progress no more than sixteen months, and it is as yet too early to draw a definite conclusion from it as a whole; it has, however, already obviously lasted long enough for some few plants that are dead and others that are dying; a number are very much worse than they were fifteen months ago, and, mirabile dictu, several of the rest have made growth that would be astonishing in any case, and is still more so in view of the wretched character of the soil.

Broadly speaking, the plants that so far are at home in the chalky soil comprise many of

the small and very small-leaved species, though *R. calophyllum*, the only species with large leaves included in the experiment, is doing well. Wilson described this as a tree, and reported it as larger than any species in Western Szechuan.

Of species with medium-sized leaves, a distinct looking plant with foliage of an uncommon olive-green colour, and to which the label *Balfourianum* is attached, has grown apace. *Hunnemannianum* has unusually narrow pointed leaves, and those of *Wiltonii* are thicker than most, with curiously reticulated surface, brown felted on the under side. No fault is to be found with the growth of *R. haematodes* or *R. dichroanthum*, a Tali plant.

The smaller-leaved section includes *Davidsonianum*, a Tachien-lu species, *lutescens* from Mupin, *ambiguum*, *polylepis* and *longesquamatum*, all three, according to Wilson, common plants of Western Szechuan; *Augustinii* comes from Western Hupeh, and to all these may be added *adenogynum*, as well as a species marked A.F., and which I am unable to identify.

Four of the very small-leaved species are flourishing, and these are *Hanceanum*, a Mupin species, *micranthum*, *longistylum*, and an unnamed plant.

R. racemosum has not been included in the experiment, since it has been known for some time that this species from Yunnan is remarkably tolerant of lime provided it is grown in lime-bearing soil *ab initio*. To transfer a grown plant of this species from an acid soil to one containing lime in fair proportion is, in the writer's experience, to court certain failure.

When received the various plants were small and with little or no ball to the roots, and curiosity on the point getting the better of discretion, investigation has set at rest all question of the roots being well into the surrounding soil. The plants have had no especial care, and have had to take the weather as it came.*

An isolated experiment over a short period of time and on a small scale should not be made the basis for extravagant notions as to the general suitability of any group of Chinese *Rhododendrons* for use on calcareous soils, but the result of the trial, as far as it has gone, justifies the hope that something of the kind may be undertaken on a larger scale and under conditions enabling the many interesting ecological and physiological questions involved to be dealt with at the same time. A. Grove.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

LIME-WASH FOR FRUIT TREES (See pp. 53, 52).—I have read with interest the discussion by various contributors on the subject of aphid eggs and lime-washing. As regards *Southern Grower's* experiment with lime mixtures, I venture to anticipate (though I fear, late in the day) his probable results. If he has used size with hot or unslaked lime mixture he will find the wash run and give no thickness of coat. If the lime mixture was cold and well slaked (say, after six hours) the mixture will be improved, but will wash off with rain. If he is lucky and gets the glue at exactly the right temperature—moderately warm—he will obtain a very resistant coat. Both lime and cement and plaster of paris were failures here. The same applies to the addition of milk, as advised by M. V. Many of these substances often advocated may secure adhesiveness when the coat required is only a thin one, as for whitewashing walls or marking tennis-courts, but the problem is much more difficult when a thick coat is required, as in lime-washing to cover eggs as big as those of aphids. I do not believe that success will be obtained by the use of lias lime, and I

† *A Naturalist in Western China*, Vol. I., p. 249. The italics are the present writer's.

* *Gard. Chron.*, June 12, 1915, p. 325. The italics are the present writer's.

* R. Farrer in *Gard. Chron.*, May 29, 1915, p. 289.

† *A Naturalist in Western China*, Vol. I., pp. 236-7.

would caution anyone from trying it except on an experimental scale. As regards the use of size as mentioned by Dr. Durham, success may be obtained if used with cold well-slaked lime together with the small proportion of potassium dichromate. Details and quantities may be found in the *Annual Report, Agric. and Hort. Research Station, Long Ashton, Bristol, 1914*, p. 87. I should like to state in this connection that I have no recollection of obtaining the idea of the use of dichromate either from Dr. Durham or from anyone else. Its use has at Long Ashton been attended with success, and the amount of size (or rather hide glue) in the formula used was enough to bind the lime together. As regards Dr. Durham's second point, that "the opaque lime tends to shelter the light from the chromatized gelatine," I can only assure him that the difficulty was not in getting too little action, but in getting too much. If more dichromate than that in the formula—Lime, 30 lbs.; glue, 2 lbs.; dichromate, $\frac{3}{8}$ oz.; water, 12 gallons—was used, the first result was that a very hard but brittle coat was obtained, and a still further increase resulted in the breaking down of the mixture altogether in that it "thinned" badly on being applied. I venture to think that growers will agree that a double spraying would be out of the question, owing to the expense, so that it is needless to consider its possibilities. So far I have not found direct evidence that the lime coat of the second year's spraying washes off more easily than the first, but it is a point to consider. The lime-gelatin-dichromate mixture was worked out in the laboratory, the various mixtures being tested by being poured on to glass slides. There is one further point I would like to mention. So far as experience goes here every cover coat, no matter how adhesive, will tend to split if put on before a certain (unknown) date. I have a certain amount of evidence tending to prove that at the so-called "ascent of sap" there is a comparatively sudden swelling of the stem and larger boughs of a tree, and that this enough to split off any coat of wash. This idea is not proved yet, but I hope to test it this spring. As regards the effect of frost on the autumn generation of aphides as quoted by *Southern Grower*, I would like to make the following suggestion. Whether or not frost has a direct effect seems uncertain. That it has an indirect one I believe. *A. pomi* lays its eggs in great quantity on a few twigs, while *A. sorbi* scatters them very diffusely. The former began egg-laying near the beginning of October at Long Ashton, but *A. sorbi*, so far as I know, not until the 20th. Frost set in on November 14, as a result of which leaves began to fall in fair quantity, taking with them many aphides which had not yet reached the egg-laying stage. I doubt whether these aphides ever reached the tree again. If leaf fall had occurred earlier more would have been destroyed and far fewer eggs would have been laid. As it is, eggs of aphids are common here, and given favourable conditions might be troublesome. *A. H. Lees, University of Bristol Agricultural and Horticultural Research Station.*

—In reply to *Southern Grower* as to the chemical nature of acetylene gas refuse, my experience is that it is not harmful to dormant fruit trees. Gooseberry bushes have been treated for several winters with acetylene refuse as a preventive against birds eating the buds, and the material has made no difference to the bushes, as they continued to bear the usual crop of fruit. Like others, I have also tried this refuse as a dressing for the soil, and although I have noticed no improvement on the crop, there was no harm done. As I have given acetylene gas refuse a fair trial, both on root and branch, I am confident as to the safety in using it for the spraying of fruit trees. *D. D. B.*

GLADIOLUS HYBRIDS. In your review of the article (January 15) on the origin of the modern races of *Gladiolus* by Mr. A. C. Hottes in the *Journal of Heredity* the uncertainty as to the parentage of the original *G. gandavensis* is referred to. The type is still in existence, and may be seen in cottage gardens in Wales and Cornwall and Devon growing as an established

perennial in large clumps that have evidently been undisturbed for years. In my article on the florist's *Gladiolus* (January 8) I gave the parentage as *psittacinus* × *cardinalis* on the authority of Mr. J. G. Baker, who says "not *psittacinus* × *oppositiflorus* as Herbert supposed." It is an opinion one cannot lightly question, and I do not know the grounds of it, but I have always thought that Herbert was perhaps after all right, or, at any rate, that the original *G. gandavensis* was derived from *G. ramosus* (= *G. oppositiflorus* × *cardinalis*) crossed with (it) *psittacinus* as Mr. Hottes states. Dr. Van Fleet in his paper at the International Conference on Plant-breeding and Hybridisation, New York, 1902, says "Many growers have little doubt that the original *gandavensis*... was produced by a union of *psittacinus* with something of the *oppositiflorus* type, instead of with *G. ramosus*, as so often claimed. We have grown many direct hybrids of *psittacinus* and its allies with *oppositiflorus* and *floribundus* that appeared quite identical with *gandavensis* (the type)... while, on the other hand, repeated attempts, extending over many seasons, to hybridise *cardinalis* with *psittacinus* and its allies have uniformly failed. This is the experience of more than one European investigator, and may be taken to almost conclusively settle the matter." It is, however, a matter of historical interest only, and of no importance horticulturally or scientifically, for all three species, *cardinalis*, *oppositiflorus* and *psittacinus* were certainly included in the parentage of the *Gandavensis* race that has come down to us, at any rate, from the time of Souchet. I think also that *G. blandus* was certainly used, and is apparent in some varieties, though it is very likely that few *blandus* hybrids have survived since. As it does not give good results generally in crossing, these would tend to be eliminated. Of the parentage of *principes* there is no doubt, as Dr. Van Fleet, who raised it, states that "it came from seed of *cruentus* × *Chilensis*," and the characters of *cardinalis*, *Sunderland* and *cruentus* are clearly predominant. It is, however, apparently in some degree a mutation, or new break, for he adds that "attempts to reproduce *principes* by repeating the original cross have always failed." There is also no doubt that the blue *Gladioli* are due chiefly to *G. papilio*, though the depth of colour in some of the varieties is certainly very surprising and difficult to account for, as *papilio* is comparatively a light and reddish purple. A very distinct character of *papilio* is that the ground colour is not uniform, but is "nettled," or "tessellated," and this may nearly always be seen in "blue" varieties, especially when the colour thins out. I have used *papilio* and have raised varieties with very dark purple or indigo flowers, darker than Baron J. Hilot or La Nuit, almost as dark as a "black" Pansy. How the intensification of colour in flowers is produced is a problem well worth investigating, as being a possible instance of an addition of a new factor; that is, new in the sense of being an extra factor even if it is only a reduplication of one already existing. Such reduplication cannot occur in normal reproduction, owing to the reduction divisions of the maturation process, and being a species it is to be expected that the factor already exists as a "double-dose," unless there is an undiscovered dark form of *papilio*. Otherwise Mendelism seems to offer no other explanation than that colour-inhibiting factors are dropped out, which is not altogether satisfying in the present case. *A. J. Bliss.*

[Colour-intensifying factors are known to exist. Such factors, though not a source of colour in themselves, are able to deepen a colour produced by other factors. It seems probable that such an intensifier brought in by the other parent accounts for the darkening of the colour of *G. papilio*—*Ens.*]

ROOT-CUTTINGS AND "SPORTS." Referring to a note of my exhibit to R.H.S. Scientific Committee (*Gard. Chron.*, p. 53) I should like to add a few words. The point was that *all* the plants (about 60) raised as root-cuttings from *Bouvardia Bridesmaid*, pinkish-white double,

* Baker, *Handbook of the Endive*.

were Hogarth, carnation-scarlet double. My attention was called to this subject by the lecture of Mr. C. E. Pearson to the Horticultural Club, in which he stated that root-cuttings of double *Bouvardias* had been known to produce singles. Now, since shoots formed from true roots arise endogenously as buds from the plerome or "core" of the plant, whenever root-cuttings give plants different from those raised as stem-cuttings, the plant must be what Baur calls a "periclinal chimæra," having a core of one variety and a covering or cortex of another. The most familiar examples are the variegated forms of *Pelargonium* and numerous other plants which have a white covering over a green core. Such plants give plain green shoots from their root-cuttings and also from those adventitious buds which are formed in internodes of the stem (see *Gard. Chron.*, 1867, pp. 952, 1,090). The term "sport" may no doubt be applied to these cases; but if it be so used the question arises whether many other examples of sporting are not really instances of the breaking through of the central tissues, which thus exhibit characteristics normally hidden. Plants in this condition are obviously of great significance to students of genetics. The case of *Regal Pelargonium*, also quoted by Mr. Pearson, is under investigation here, and we should be glad to hear of any other possible examples. Can any of your readers supply *Pyrus japonica variegata*? This plant is quoted by Thomas Meehan (*loc. cit.*) as coming true from root-cuttings. *W. Bateson, John Innes Horticultural Institution.*

—In the early 'eighties the double-flowered *Bouvardia* Alfred Nemmer was sent here from America, where it originated as a sport from a garden variety—*Davidsonii*. Some plants of this variety were imported by the late Mr. William Bull, of Chelsea, and as the demand for it was very great I propagated it to the utmost extent by means both of cuttings of the young shoots and of the roots. There was no difficulty with the cuttings from the shoots, as they all retained their true double form. It was, however, different with those propagated from roots, as many of them (roughly one-half) bore the single blossoms of *B. Davidsonii*. Though I obtained a good stock by means of root cuttings, it was necessary to flower every plant propagated in this way before it could be sent out. Once they flowered true we never found that they reverted to the single form, nor of the vast numbers distributed did we hear of any complaint on that score. *W. T.*

FROST AND VEGETATION.—Can it be that frost has a hastening influence on vegetation? Though the ground here was frost-bound for weeks previous to Christmas, in a very short time thereafter, though the temperature was still low, flowers began to appear—*Snowdrops*, *Primroses*, *Hepaticas* (the white, as usual, first), *Periwinkles* (both major and minor varieties), *Erysimum*, *Winter Aconite*, *Lithospermum prostratum* and various *Hellebores*. *Hellebores angustifolius* is the finest of the Christmas Rose section of this genus at present; *H. altifolius* has only a few flowers left, the greater portion having been used at Christmas. There seems to be some misunderstanding about the identity of the latter. I have seen a recommendation to lift the plants and force them into flower for Christmas, but here they begin flowering in October and continue all through November and December. This species is one of the good things the late Miss Francis Hope gave me nearly forty years ago, and it has hitherto remained constant in opening its flowers as I have just stated. *R. P. Brotherton.*

RHODODENDRON NOBLEANUM.—A fine specimen of *Rhododendron nobleanum* is in full flower here. The plant measures 10 feet in height and about 14 feet through. Two years ago it flowered very profusely in November and December. Usually when it flowers in January it flowers again the following November. The plant is about fifty years old, and stands among the *Rhododendrons* on the bed of an old lake which was drained dry when the cemetery was formed. *J. D. Robertson, City of London Cemetery and Crematorium, Manor Park.*

POTTING BEDDING PLANTS (see p. 39).

—Because I urged economy in the matter of cleaning the pots in preparation for re-potting, your correspondent is surprised that I should also advise shifting the plants into 5-inch pots. In the one instance the economy suggested makes very little, if indeed any, difference to the growth of the plants, but by my method of re-potting I secure larger and better plants. As to whether the grower has sufficient accommodation for plants of the larger size, or whether the accommodation can be put to better use in other ways, is another question, which only the man on the spot can decide. *H. P. Rowles.*

THE EFFECTS OF FROST AND COLD ON CHRYSANTHEMUM FLOWERS.—It is a risky undertaking and a waste of time to grow indoor chrysanthemums for flowering throughout the winter months in unheated glasshouses, as the severe weather of November and December last year proved. The effects of frost and cold not only retard the flowering of these plants, but reduce the size of the flowers, and in some cases completely change the colour, so that one would almost think the plants had been wrongly labelled. For instance, Mary Richard, son, instead of being reddish-salmon, has flowers of canary yellow. Two plants of F. W. Smith—a rich pink-flowered variety—have produced white flowers, while the old white pompon, *Soeur Mélanie*, has many small flowers which are of very little use. *D. A., Mullothan.*

SOCIETIES.**ROYAL HORTICULTURAL.**

JANUARY 25.—There was a small exhibition in connection with the fortnightly meeting held on Tuesday last, in the Vincent Square Hall, Westminster. Many of the exhibits in the floral section were of the same character as at recent meetings; on the other hand, the early Alpines and hardy plants are beginning to appear, and these, with Carnations, Ferns, Primulas, Cyclamens and Violets, were the principal subjects.

The Floral Committee recommended three Awards of Merit to novelties, and awarded eleven Medals to collections.

There were several good groups of Orchids. The Orchid Committee recommended an Award of Merit to a variety of *Cattleya Trianae*, and six Medals for collections.

There was very little in the fruit and vegetable section, the only awards being two Medals.

At the 3 o'clock meeting in the lecture room a paper by Mr. W. E. COLLINGS on "The Economic Status of Wild Birds" was read by the Secretary.

Floral Committee.

Present: Mr. H. B. May (in the chair), Messrs. W. P. Thomson, C. E. Shea, J. T. Bennett-Poe, C. Dixon, John Dickson, W. Bain, W. Howe, J. W. Moorman, J. F. McLeod, R. Hooper Pearson, W. A. Bilney, W. J. Bean, G. Reuthe, R. C. Notcutt, John Green, G. Harrow, G. Paul, E. H. Jenkins, C. E. Pearson, Jas. Hudson, J. Jennings, W. B. Cranfield, T. Stevenson, A. Turner and J. W. Bain.

AWARDS OF MERIT.

Iris Little Bride.—A seedling of unrecorded parentage in the small bulbous section, with falls of ivory-white. The signal, or centre line, is bright orange, and the standards are faintly suffused with blue, the crest being paler. The flower is of very charming appearance, and distinct in its section. Shown by Messrs. H. J. CHAPMAN, LTD., Rye.

Eucharis Lawrenceae.—A hybrid raised from *Eucharis Richardiana* and *E. burfordensis*, the last itself a hybrid. Compared with *E. grandiflora* (amazonica) the green in the chalice is almost absent, and the rim is deeply toothed. The segments are pure white, and not so stiff in appearance as in the older species. The flower is drooping, and the back part shows conspicuously. The segments are gracefully waved at the margins.

Columnnea gloriosa discolor.—This elegant

exotic has long, pendant shoots, furnished with scarlet hooded blooms. The tube underneath bears a rich golden blotch. The flowers stand at right angles to the shoots, and are much larger than the leaves, which are themselves highly decorative, being of a rich velvety green with shades of bronze. The plant is a good subject for baskets, but needs a very warm house. These two were shown by ELIZABETH LADY LAWRENCE, Burford Lodge, Dorking (gr. Mr. W. Bain).

GROUPE.

The following medals were awarded for collections:

Silver Flora Medal to Messrs. H. B. MAY AND SONS, Edmonton, for Ferns and indoor flowering plants. This very attractive group was of large size, and included many hardy Ferns, as well as exotics. A fine touch of colouring was furnished by a group of the scarlet *Euphorbia jacquiniæflora* in a stinging of Ferns, with *Saxifraga summitosa tricolor* as an edging. The beautiful *Cineraria Feltham Blue* was shown well, and another notable subject was *Adiantum farleyense Lemeskii*, the young fronds having a tinting of rose.

Silver Bank on Medals to Messrs. ALLWOOD BROS., Wivelsfield, Haywards Heath, for perpetual-flowering Carnations. Messrs. W. CUTBUSH AND SON, Hightgate, for Carnations, hardy flowers, forced shrubs, zonal-leaved *Pelargoniums*, and the blue *Coleus thyrsoides*. Messrs. STUART LOW AND CO., Enfield, for Perpetual-flowering Carnations and excellent *Cyclamens*, of which the finest plants were of the Giant White variety. Messrs. PETERS, Bayswater, for hardy plants, including Alpines for the rockery, with a background of dwarf shrubs. They showed the large white-flowered *Saxifraga burseriana* Gloria and many well-flowered plants of *S. b. major*. Mr. L. R. RUSSELL, Richmond, Surrey, for ornamental shrubby species in pots, including well-flowered Azaleas, and Mr. KETILL, Wimborne, for Violets.

Bronze Bank on Medals to Messrs. J. CHEAL AND SONS, Crawley, for Alpines and shrubs. Mr. M. PITCHARD, Christchurch, Hampshire, for Alpines in variety, including *Saxifragas* in flower; the handsome *S. (Megasea) speciosa rosea* was very attractive, whilst numerous *Hellebores* in pots were flowering freely. Mr. CLARENCE ELLIOTT, Stevenage, for a collection of early-flowering *Saxifragas*, of which the best were *Saxifraga burseriana* Gloria, and the dwarfier *S. Boydii alba*. Messrs. WATERER, SONS AND CRISP, LTD., Twyford, for Alpines on a rockery.

Orchid Committee.

Present: J. Gurney Fowler, Esq. (in the chair), Sir Harry J. Veitch, Sir Jeremiah Colman, Bart., Messrs. Jas. O'Brien (hon. secretary), J. Gurney Wilson, J. Wilson Potter, F. J. Hambury, Paulina Balli, A. McBean, Walter Cobb, T. Armstrong, J. Charlesworth, J. Cypher, W. H. Hatcher, H. G. Alexander, J. E. Shill, E. H. Davidson, C. H. Curtis, S. W. Flory, W. Bolton, C. J. Lucas, R. Brooman White and R. A. Rolfe.

AWARD OF MERIT.

Cattleya Trianae *Rochling's variety*, from Messrs. CHARLESWORTH AND CO., Haywards Heath. A magnificent variety of perfect shape, having the rich colouring of *C. Trianae* Mooreana, which it most nearly resembles, and a showy purple feather on the petals as in *C. Trianae* Backhousiana, on which it is a great improvement. The sepals and broad petals are white, tinged with rose colour, the petals having a medium purple band; lip ruby-purple in front, disc yellow.

PRELIMINARY COMMENDATION.

Odontoglossum Anzoe (*serimum* & *Colobus*), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. A fine *Odontoglossum*, flowering for the first time. The substance and form of the flower is near to the best type of *O. crispum*, with enlarged segments and broad fringed petals. The ground is white, toned by purple colour on the reverse side, and heavily blotched with deep reddish claret. The lip is white with red-brown blotches in front of the yellow crest.

GENERAL EXHIBITS.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier), was awarded a Silver Flora Medal for a fine group of *Cymbidiums* raised at Gatton Park, including twenty-six specimens of *C. Queen of Gatton* (insigne & Lady Colman), all with fine spikes of flowers varying from white marked with purple to pale buff with reddish markings; *C. Lady Colman* var. *Golden Queen*, with bright-yellow ground colour, and *C. Coningshamum*.

Miss E. WHILMOTT, Warley Place, Great Warley, showed a good specimen of the old, but now rare, *Oncidium Cebolleta*, with thick cylindrical leaves and pretty yellow flowers. The plant is widely distributed in the West Indies and South America, and is known in some gardens as *O. juncifolium*.

Messrs. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a compact group of fine specimens, including good hybrid *Odontoglossums*; their handsome *Odontonia Langwayi*; a selection of *Cypripediums*, of which the showy *C. Tigris* (Mrs. Wm. Mostyn & Earl of Tankerville) was the best; *Odontodia Zumbia* and *Sophranthea Saxa*.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, were awarded a Silver Flora Medal for an attractive group of novelties, the centre being composed of *Odontoglossums* flowering for the first time, the remarkable *O. Anzoe*, *O. Jasper splendens*, and *O. Martins* (Amabile & Jasper), a handsomely-blotched flower, being the best. Others noted were the white *Cattleya Perivalana alba* Orchidhurst variety, *Odontonia Irigensis*, *Odontodia* and *Cypripediums*, all well grown.

Messrs. J. CYPHER AND SONS, Cheltenham, staged an effective group for which a Silver Flora Medal was awarded. In the centre was *Calanthe* Bryan, C. Wm. Murray, the rose-coloured *C. Bella*, and the white *C. Harrisiana* arranged with white *Laelia anceps*. Varieties of *Cypripedium* *Leeanna* were included, together with other favourite forms, *C. Helen II.* Westenhurst variety being specially attractive. Scarlet *Odontodia* and *Sophranthea grandiflora* gave bright colouring to the group.

Messrs. SANDER AND SONS, St. Albans, who awarded a Silver Flora Medal for an interesting group of hybrids and rare species. The *Cymbidiums* included their new *C. Albionis* (*Gottianum* & *grandiflorum*), *C. Cooperi*, varieties of *C. Alexandri* and others; some well-flowered mauve-purple *Laelia* *Gouldiana* were arranged effectively with white *Laelia anceps*. There were also a selection of *Odontoglossums*, including the rare *O. coronarium brevifolium*, *Epidendrum polyanthum* and other smaller species in good form and condition.

Messrs. J. AND A. McBRAN, Cooksbridge, were awarded a Silver Flora Medal for a group composed principally of *Cymbidiums* raised at Cooksbridge. These were arranged with white *Laelia anceps* and grand *Odontoglossum crispum*, two heavily-blotched seedling forms of which were among the best yet shown. The *Cymbidiums* included forms of *C. Alexandri*, *C. Schlegelii*, with its new yellow variety, *aureum*, and *C. Gottianum*.

Messrs. FLORY AND BLACK, Orchid Nursery, Slough, showed *Brassia-Laelia-Cattleya* *Simon-L.C. Hippolyta Phoebe* & *B.C. Digbyana Trianae*, with showy coppery-orange flowers having a ruby-red front to the lip, a distinct sparsely-spotted *Odontoglossum ardentissimum*, and several *Masdevallias*.

Messrs. STUART, LOW AND CO., Liphaveshook, Sussex, showed the fine *Cattleya Trianae*, The Baron, which gained a First-class Certificate in 1915, and *Cypripedium Anzoe*, *Leeanna* *Clink* *aberrantum* & *Mrs. Wm. Mostyn*.

Mr. C. F. WATERS, Bacombe, staged a small group of excellent *Odontoglossum crispum*, *Lycaste Skinneri*, *Vanda coerulesa* and *Dendrobiums*.

Mr. G. W. MILLER, The Nurseries, Wisbech, showed a handsome *Cypripedium* of the *C. Troilus* section with a large and well-formed flower heavily blotched on the dorsal sepals.

Fruit and Vegetable Committee.

Present: Mr. Jos. Cheal (in the chair), Col. Mark Lockwood, M.P., W. Bates, E. Beckett, A. R. Allan, W. E. Humphreys, H. Markham, H. J. Wright, G. Kelf, A. Bullock, J. Vert, J. Harrison, Owen Thomas, W. Poupert, H. S. Rivers, and E. A. Banyard.

Canadian-grown Apples were exhibited by J. A. BAKER, Esq., M.P., Donnington, Donnington Road, Harlesden. The fruits were in boxes as shipped for the home markets, and represented splendid specimens of such well-known American varieties as Baldwin, Northern Spy, Canada Red Fallwater, Ben Davis and Stark, all of imposing appearance, and generally of very high colouring. (Silver-gilt Banksian Medal.)

Sir ALBERT ROLLIT, St. Ann's Hill, Chertsey, showed fruits of Citrus ducnana (Grape Fruit), for which a Silver Banksian Medal was awarded.

Mr. J. C. ALLEGROVE, Middle Green, Langley, exhibited his new late Pear Mrs. Seden (Seckle x Bergamotte Esperne), which received the R.H.S. award in January, 1912. The fruits are of medium size, heavily flushed with dark red on the side next to the sun, and very round in shape, after the Bergamotte type. The flavour is excellent.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

ANNUAL MEETING.

The Results of the elections were recorded in the last issue.

JANUARY 20.—The seventy-sixth annual meeting of the supporters of this institution took place on the above date. The result of the election was published in the last issue, and we now reproduce the report of the executive committee for 1915.

REPORT OF THE COMMITTEE.

In presenting their 76th Annual Report and Statement of Accounts (as audited) for the year 1915, the Committee are indeed thankful that they have been enabled to continue their work without any diminution of benefits—permanent or temporary—to those on the funds of the Institution, on whose behalf it has ministered for the past seventy-seven years.

At the same time, the Committee deeply regret to report a falling off of income, due to many claims upon the charitable public in consequence of the terrible war in which, unhappily, our country is still engaged; and also to the abandonment, inevitable under the circumstances, of the usual Festival Dinner, which had been held without intermission each year since 1845, and was the means of successfully raising funds in aid of the Charity.

At the commencement of the year 1915 there were 265 annuitants, 150 men and 115 widows, receiving annuities at an annual cost of £4,700. During the year twenty-three have died—ten men and thirteen widows. Among the latter may be mentioned Ann Allen, the oldest beneficiary, who passed away at the great age of 191 years, having been born in 1814. She retained her mental faculties until the last, and was always extremely grateful for the help given to her by the Institution for so many years. She and her husband, who had been on the funds until his decease in 1899, together received no less a sum than £464. Four of the men left widows, whose circumstances were of such a nature as to warrant their being placed on the funds for the Annuity, in accordance with the powers conferred on the Committee under Rule III. 13. The Committee recommend an election this day of eighteen annuitants from an approved list of eligible candidates, and trust the friends and supporters of the Institution will approve of their action.

The Victorian Era Fund and the Good Samaritan Fund still prove a source of incalculable benefit in giving grants to the unsuccessful candidates awaiting election, and to others in temporary distress through illness or other causes. The latter fund has been particularly useful in enabling the Committee to immediately assist cases of a very pressing nature, which could not be helped from any other source.

It may be as well to point out that as the interest alone from these funds is available, the Committee would gratefully receive any special donations to enable them to still further increase their usefulness.

The Committee gratefully acknowledge the gracious kindness of Her Majesty Queen Alexandra in allocating, through the Committee of "Alexandra Day," a grant of money to the Charity.

They are also indebted to Joseph Rochford, Esq., for his generous gift of £600 4½ per cent War Loan.

The Committee also again express their indebtedness to those Noblemen, Ladies, and Gentlemen who have so kindly allowed their gardens to be opened to the public for the benefit of the cause, viz., The Right Hon. Lord Northbourne, the Lady Battersea, Sir Frank Crisp, Bart., J.P., LL.B., and Roger J. Corbet, Esq.

The Committee desire to offer their sincere thanks also to the Hon. S. Beiler, W. A. Bilney, Esq., J.P., the Hon. Auditors, Messrs. George H. Cobley and Co., and Thomas Manning and Bert J. Moore; also to the Horti-

cultural Press, the George Monro Concert Committee, and to other friends, for their valuable services to the Institution.

The Committee also refer to the kindness of Arthur W. Sutton, Esq., J.P., F.L.S., V.M.H., George Monro, Esq., V.M.H., and "Anonymous," for generously giving a year's allowance to three of the unsuccessful candidates, who were most grateful for the help afforded.

The several auxiliaries still prove valuable adjuncts to the work, and most grateful thanks are due to the following honorary officers for their much appreciated services.

BRISTOL AND BATH

Presidents. Hon. *Treasurers.* Hon. *Secretaries.*
Col. H. Cary Batten Mr. George New Mr. F. E. Allingham.

WORCESTER.

Rt. Hon. Earl Beauchamp Mr. John White, Esq. Mr. Harry J. White (pro tem.)

DEVON AND EXETER

Trichawke, Keke Mr. W. Mackay Mr. W. Mackay

WOLVERHAMPTON

C. T. Mander, Mr. George Bradley Mr. George Bradley

BERKSHIRE, READING AND DISTRICT

Mrs. Roland Arthur W. Sutton, Mr. L. Castle Sperling Esq. J.P., F.L.S., V.M.H.

LIVERPOOL.

The Rt. Hon. the A.J. Crippin, Esq. Mr. R. G. Waters Earl of Derby, man

With the deepest regret the Committee have again to record the loss the Institution has sustained by the death of many staunch friends and supporters during the year.

Among these may be mentioned the Right Hon. Lord Rothschild, G.C.V.O., a Vice-President, and who had, with his family, generously supported the work for over sixty years. He was Chairman of the Festival Dinner in 1897, when a large sum was raised in honour of Her Majesty the late Queen Victoria's Diamond Jubilee, and a special fund established, called by Her Majesty's express permission the "Victorian Era Fund." The losses also include Mr. Bailey Wadde, a member of Committee and a whole-hearted worker in the cause of the Charity; Sir Oswald Mosley, Bart.; Mr. Leopold Salomons, J.P.; Mr. David W. Thomson, of Edinburgh, a prominent and

valued helper for many years; Lieut.-Col. Gosling; Mr. F. W. Harvey (Editor of *The Garden*); Mr. Thomas A. H. Rivers, Mr. J. Crossley Eno, Mr. Arthur Young, Mr. E. T. Cook (Canada), Mr. Thos. Edwards, Mrs. G. F. Wilson, Miss Dugdale, Miss Henley, and others. The loss of these friends is severely felt, and their places will be difficult to fill.

In conclusion, the Committee have to offer their most grateful thanks for the liberal and generous response to the appeal made last year in lieu of the usual Festival Dinner, and to express their sincere hope that in this terrible time of stress and anxiety the friends and supporters of the Charity will do their utmost to continue the financial assistance they have hitherto so generously afforded in order that the benefits now given to the poor old people, and which have been such a boon to so many for the past seventy-seven years, may be in no wise curtailed.

(Signed) HARRY J. VEITCH,
Treasurer and Chairman of Committee.
GEORGE J. INGRAM,
Secretary.

THE PROCEEDINGS.

Sir Harry Veitch, on rising to move the adoption of the report and balance-sheet, said that this was an occasion which could never occur again; he referred to the fact that it was exactly the thirtieth time that he had taken the chair at the annual meeting of the society since his election in 1886. Another fact which added interest to the occasion was the fact that the secretary, Mr. George J. Ingram, had been elected to that post twenty-five years previously. When he himself became treasurer the society's activities were more limited than at present. There were only 118 pensioners receiving regular aid—now there were 265. The invested capital was only £21,000, as against about £40,000 to-day, this being exclusive of the two special funds, the accounts of which were kept separately. They had several times been able to elect all the candidates without taking a vote; for instance, in 1889, when there were only sixteen appli-

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

RECEIPTS AND PAYMENTS FOR THE YEAR ENDING DECEMBER 31, 1915.

RECEIPTS.		PAYMENTS.	
£ s. d.	£ s. d.	£ s. d.	£ s. d.
To Balance with Treasurer, January 1, 1915	1416 0 0	By Annuities and Gratuities, including special gifts from Messrs. A. W. Sutton, Gen. Monro, Anonymous, and Schroeder Annuity	4700 4 8
.. Deposit Account, January 1, 1915	3530 0 0	.. Rent, Firing, Lighting, and Salaries of Secretary and Clerk	573 13 3
Do Wolfe Legacy and Interest, January 1, 1915	1143 11 4	.. Printing, Stationery, etc.	125 14 7
.. Annual Subscriptions	1,211 3 0	.. Less Advertisements	44 5 4
.. Donations, including Special Gifts	1,697 5 10	.. Postages, Reports, Polling Papers, and Ordinary	44 0 10
.. Gift of War Loan 4½ per Cent (Joseph Rochford, Esq.)	600 0 0	.. Postages of Special Appeals	10 2 8
.. Legacies, Edwin Williams, the late	50 0 0	.. Carriage, Telegrams, and Incidental Expenses	10 11 0
.. Legacies, Richard H. Smith, the late	10 10 0	.. Telephone Charges	7 10 2
.. Schroeder Annuity	20 0 0	.. Expenses of Annual Meeting and Election	6 5 3
.. Dividends and Interest	93 11 5	.. Advertisement	3 3 0
.. Income Tax Refunded	72 4 11	.. Invested in War Loan, 4½ per Cent	600 0 0
	4645 0 2	.. Balance with Treasurer, December 31, 1915	1,274 0 1
		.. Deposit Account, December 31, 1915	2,280 0 0
		.. Deposit Account, Wolfe Legacy and Interest	1,148 11 4
			4702 11 5
	£10,739 11 6		£10,739 11 6

Required to meet the quarterly payments due on January 1, 1916

The undersigned, having had access to all the Books and Accounts of the Society, and having examined the foregoing General Statement and verified the same with the accounts and vouchers relating thereto, now sign the same as found to be correct, duly vouched and in accordance with law.

GEORGE H. COBLEY AND CO., Hon. Auditors,
Chartered Accountants.

VICTORIAN ERA FUND.

RECEIPTS.		PAYMENTS.	
£ s. d.	£ s. d.	£ s. d.	£ s. d.
To Balance, January 1, 1915	245 11 11	By Gratuities	253 5 0
.. Dividends	209 1 2	.. Balance, December 31, 1915	221 0 11
.. Repaid Income Tax	19 12 10		
	228 14 0		
	£474 5 11		£474 5 11

GOOD SAMARITAN FUND.

RECEIPTS.		PAYMENTS.	
£ s. d.	£ s. d.	£ s. d.	£ s. d.
To Balance, January 1, 1915	224 7 7	By Gratuities	168 8 4
.. Donations	38 13 2	.. Balance, December 31, 1915	245 10 5
.. Dividends	139 18 5		
.. Repaid Income Tax	10 19 7		
	189 11 2		
	£413 18 9		£413 18 9

cants. The funds had suffered during the past year, and would probably suffer this year, through the omission of the festival dinner, which, until last year, had been held uninterruptedly each year since 1843. However, it would be possible to elect eighteen candidates. He wished to convey the thanks of the society to all the voluntary helpers and sub-committees who had done such good service in various ways, and not least those who had opened their parks to the public at a small charge in aid of the funds. He had just received a cheque from Sir Frank Crisp obtained in this way, which amounted to £63 3s. He drew attention to the fact that a firm of chartered accountants had been appointed auditors.

The motion was seconded by Mr. Percival Etheridge. He said that in these troublesome times it was matter for great congratulation that the institution had done so well in the past year. In looking over the balance-sheet he was impressed with the fact that the management expenses of the Fund were very small, and much below those of any similar institution he was acquainted with. He considered the appointment of professional auditors a most wise step, and hoped that the coming year would witness even greater success than heretofore.

Replying to a question, Sir Harry Veitch stated that the auditors were working in an honorary capacity, having offered voluntarily to do the work. The report and statement were then adopted unanimously.

Mr. Geo. Monro moved the re-election of Sir Harry Veitch as treasurer, and that the thanks of the institution be tendered to him for his loyal and devoted services. This was seconded by Mr. Arthur Sutton, who said that no one could have done more than, or even as much as, Sir Harry in the thirty years during which he had been treasurer. He hoped that he would be spared to his friends for many years to come. The motion was carried with acclamation.

Sir Harry Veitch then proposed the re-election of Mr. Ingram as secretary. He was glad to be able to say that they had worked together in perfect harmony for twenty-five years without a single disagreement; he wished the secretary were twenty years younger, so that they could count on his being with them for at least another twenty-five years. In his reply Mr. Ingram thanked Sir Harry Veitch and the members for their kind appreciation of his services.

Mr. J. McKerchar moved the re-election of the existing members of committee, and the election of Mr. A. Bullock in place of the late Mr. Bailey Wadds. This was seconded by Mr. Kendall and carried unanimously. Messrs. G. H. Cobley and Co. were elected hon. auditors for the year and the arbitrators re-elected.

SOUTHAMPTON ROYAL HORTICULTURAL.

JANUARY 17.—The annual meeting of this society was held at the Municipal Offices, the Mayor (Alderman W. J. Dacombe) presiding.

The annual report stated that cheques for five guineas each had been forwarded to the Royal Gardeners' Orphan Fund and the Gardeners' Royal Benevolent Fund. The Rose show had proved the popularity of the attractive grounds of South Stoneham House, and, although held under some adverse circumstances, the display was better than expected. The Carnation show had been again unfortunate in the weather, especially on the second day. At the autumn show the attendance had been disappointing, but the entries in the principal classes had been quite up to the average, and remarkable for general excellence. The Council took the opportunity offered by the show to assist the funds of the local branch of the British Red Cross Society, the effort realising a clear profit of £31. Owing to the loss of income from subscriptions and otherwise it was considered advisable to arrange for only two shows for 1916. Arrangements were being made to hold a summer-exhibition on July 12. An autumn show would be held, provided sufficient funds were available after the summer show. The statement of accounts indicated that there was a deficit on the year's working of £6 11s. The balance brought forward from 1914 was £49 4s. 2d.

Lord Swaythling was re-elected to the presidency, the vice-presidents were re-elected, and Messrs. Green, Moberly, and Green were re-appointed hon. solicitors. Mr. Fudge was again appointed hon. secretary.

SCOTTISH HORTICULTURAL.

JANUARY 18.—The annual business meeting of this association was held in the Goid Hall, 5, St. Andrew Square, Edinburgh, on this date. Mr. Pirie, the President, was in the chair, and there was an attendance of 105 members. The report of the council stated that, owing to the serious dislocation to horticulture which had resulted from the war, a prosperous year was not anticipated. With the exception, however, of a rather serious loss on the Chrysanthemum show and a restricted accession of new members, the association was in a satisfactory condition. The loss on the show, it was stated, was almost wholly due to the great falling off in the attendance, indicating a feeling of apathy or indifference to exhibitions of this sort at the present time on the part of the general public. Towards the end of 1914 the Association became the Edinburgh Branch of the Vegetable Products Committee, and since January last a regular supply of fresh fruit and vegetables had been sent to the naval bases at Aberdeen and Rosyth for the men of the North Sea Fleet. In response to an appeal for funds for this purpose a sum of over £270 was received, and, including contributions of fruit and vegetables sent direct to the bases through the Branch, over 47 tons had altogether been sent. In July last a Scottish branch of the War Horticultural Relief Fund was formed, and the association was invited to participate in the work of the committee. A sale of plants, etc., was held in connection with the Chrysanthemum Show in aid of the Fund, and a sum of £94 was realised therefrom. The financial statement for the year was submitted, which showed that there had been a falling off of £500 in the show receipts. The net loss on the year was £164 5s. 5d., of which £154 2s. 3d. represented the loss on the show. The funds at the end of the year stood at £754 8s. 6d., while the Horticultural Institution Fund amounted to £1,663 15s.

The Right Honourable the Marquis of Linlithgow was re-elected honorary president; Mr. W. G. Pirie was re-elected president; Dr. Smith and Mr. Herdman Thomson were elected vice-presidents, and Messrs. King, Dobbin, Whytock, Cairns, Scarlett, Fortune, and Thomson were elected to fill the vacancies in the Council. Mr. A. D. Richardson was re-elected secretary and treasurer, and Messrs. Robertson and Capden, C.A., were re-elected auditors.

DEBATING SOCIETIES.

DUMFRIES AND GALLOWAY GARDENERS'.

The first meeting of this Association for the Session 1916-17 was held in the Wesley Hall, Dumfries, on the 15th inst. There was an excellent attendance, the president, Provost S. Arnott, occupied the chair. A paper on "How I Grow My Sweet Peas" was read by Mr. R. A. Grizon, gardener to Major Rankine, Dalwin Garden. Mr. Grizon gave a detailed account of his methods of cultivating Sweet Peas, and a list of what he considered to be the best twelve varieties.

BRISTOL AND DISTRICT GARDENERS'.

A well-attended meeting of this Association was held on Thursday, the 15th inst. Dr. Shingleton Smith presided. Mr. Fry, a member of the Cardiff Association, read a paper on "The Cultivation of Gladioli."

WATFORD HORTICULTURAL.

The monthly meeting of this Society was held on the 11th inst., when Mr. W. R. Phillips read a paper on Chrysanthemums.

Obituary.

GEORGE PEDRICK.—The American horticultural papers announce the death, on the 16th ult., of Mr. George Pedrick, florist, of Windsor, Ontario. Mr. Pedrick was born in Devonshire, in 1853. He emigrated to Canada in 1884, and settled at Windsor, where, for the past twenty-two years, he conducted an important florist's establishment.

MARKETS.

COVENT GARDEN, January 26.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—Eds.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Azalea, white, per doz. bun.	3 6	4 0	Pelargonium, per doz. bunches, double scarlet	4 0	6 0
Camellias, white, per doz.	1 6	1 9	Richardia (Arums), per doz.	2 6	3 6
Carnations, per doz. blooms, best American varieties	1 3	2 0	Roses: per dozen blooms—		
— smaller, per doz. bunches	—	—	— Duchess of Wellington	—	—
— Carola (crimson), extra large	3 0	3 6	— Lady Hillingdon	—	—
— Malmaison, per dozen blooms	—	—	— Liberty	6 0	9 0
— pink	10 0	15 0	— Madame A. Chateaux	4 0	6 0
Daffodils, per doz. bunches	4 0	6 0	— Melody	—	—
Fuchsias, per doz.	2 0	2 6	— Mrs. Russell	—	—
Freesia, white, per doz. bun.	2 0	2 6	— My Maryland	—	—
Gardenias, per box of 15 and 18 blooms	7 0	9 0	— Niphetos	3 0	3 6
Hyacinth, Roman, per doz. spikes	0 8	0 9	— Princesse Bulgare	—	—
Lapageria, per doz. blooms	—	—	— Richmond	5 0	6 0
Lilac, white, per doz. sprays	4 0	5 0	— Sunburst	—	—
Lilium longiflorum, per doz., long	3 0	3 6	— White Crawford	—	—
— short	3 6	—	Snowdrop, per doz. bun.	2 0	3 0
— lancifolium album, long	2 0	2 6	Spiraea, white, per doz. bun.	—	—
— short	2 0	2 6	Stock, double white, per doz. bunches	—	—
— lancifolium rubrum, per doz., long	1 6	2 0	Tuberose, per packet, 24 blooms	1 6	—
— short	1 6	—	Tulips, single, white, per doz. bunches	5 0	7 0
Lily-of-the-Valley, per dozen bunches:—			— coloured, per doz. bun.	6 0	10 0
— extra special	24 0		— double orange, per doz. bun.	12 0	15 0
— special	15 0	18 0	— red, per doz. bun.	15 0	18 0
— ordinary	—	—	— pink, per doz. bun.	12 0	15 0
Orchids, per doz.:—			Violets, per doz. bunches	1 6	2 0
— Cattleya	12 0	15 0	— double, Marie Louise, per doz. bun.	4 0	6 0
— Cypripedium	2 0	3 6	— Princess of Wales	2 6	4 0
— Odontoglossum crispum	4 0	5 0	White Heather, per doz. bun.	1 0	—

French and Guernsey Flowers.

	s.d.	s.d.		s.d.	s.d.
Anemone, double pink, per doz. bun.	1 6	2 0	Ranunculus, red, per doz. bun.	8 0	9 0
— de Cien mix., per doz. bun.	6 0	7 0	— Barbaram, per doz. bun.	3 0	4 0
— moire, per doz. bun.	4 0	5 0	— carmine, per doz. bun.	3 0	4 0
Marguerites, yellow, per doz. bunches	2 0	2 6	Safrano, Roses, per packet, 24's	—	—
Mimosa (Acacia), per doz.	6 0	7 0	Stock, white, per pad	5 0	6 0
Narcissus, Grand Primo, per doz. bun.	3 0	4 0	Violets, Parma, large bun., each	3 0	4 0
— paper white, per pad	5 0	6 0	— single, per pad, 48-60's.	—	—
— Soleil d'Or (Guernsey), per doz. bun.	3 0	4 0	— per doz.	—	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches	7 0	8 0	Fern, French, per doz. bunches	0 6	0 8
Agrostis (Fairy Grass), per doz. bunches	2 0	4 0	— common	4 0	5 0
Asparagus plumosus, long trails, per half dozen	1 6	2 0	Galax leaves, green, per doz. bunches	—	—
— medium, doz. bunches	12 0	18 0	Hardy foliage, various, per doz. bun.	4 0	8 0
— Sprengerii	8 0	12 0	Honesty, per doz. bunches	10 0	12 0
Berberis, per doz. bun.	4 0	5 0	Lichen Moss, per doz. boxes	15 0	18 0
Carnation foliage, doz. bunches	4 0	5 0	Moss, gross bunches	7 0	8 0
Croton foliage, doz. bunches	12 0	15 0	Myrtle, doz. bun. English, small-leaved	6 0	—
Cycas leaves, per doz.	5 0	12 0	— French, per doz. bunches	1 0	1 3
Eulalia japonica, per bunch	—	—	Smilax, per bun. of 6 trails	1 0	1 3

REMARKS. There is no fresh subject to record this week. Business throughout appears to be more brisk.

doubtless, owing to lower prices. There is an abundant supply of Carnations, but the blooms are not of first-rate quality. Tulips are even more plentiful, and a large assortment is now offered, including double Orange, double Red, and double Pink. Prices range from 6d. to 1s. 6d. per dozen blooms. Large consignments of English-grown Daffodils and Violets are being received daily. The Violets are exceptionally fine, owing to the mild weather. Large consignments of White and Yellow Narcissus, Daffodils, Violets and Proseas are arriving from Guernsey and St. Malo, and prices for these flowers are falling. Consignments of flowers arrive daily from the South of France in fairly good condition. They include a few baskets of White Stocks.

Plants in Pots, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Aralia Sieboldii, dozen ..	4 0-6 0	Ferns, choicer sorts, per doz.	8 0-12 0
Araucaria excelsa, per doz.	18 0-21 0	— in 32's, per doz.	10 0-18 0
Asparagus plumosus nanus, per doz.	10 0-12 0	Ficus repens, 48's, per doz.	4 6-5 0
— Sprengeri, per doz.	6 0-8 0	— 60's, per doz.	3 0-3 6
Aspidistra, per doz., green ..	21 0-30 0	Genistas, 48's, per doz.	12 0 —
— variegated ..	30 0-60 0	Geonoma gracilis, 60's, per doz.	6 0-8 0
Azalea, each ..	2 6-3 6	— larger, each ..	2 6-7 6
Begonia, Gloire de Lorraine, 48's, per doz.	10 0-12 0	Grevillea, 48's, per doz.	—
Cacti, various, per tray of 15's	4 0 —	Hyacinths, white and coloured, 48's, per doz.	10 0-12 0
— tray of 12's ..	5 0 —	Kentia Belmoreana, per doz.	4 0-8 0
Cinerarias, 48's, per doz.	9 0-10 0	— Forsteriana, 60's, per doz.	4 0-8 0
Cocos Weddelliana, 48's, per doz.	18 0-30 0	— larger, per doz.	18 0-36 0
— 60's, per doz.	8 0-12 0	Latania borbonica, per doz.	12 0-30 0
Croton, per doz.	18 0-20 6	Lilium longiflorum, per doz.	24 0-30 0
Cyclamen, per doz.	10 0-12 0	Marguerites, in 48's, per doz.	7 0-8 0
Daffodils, 48's, per doz.	8 0-10 0	— white Pandanus Veitchii, per doz.	36 0-48 0
Dracaena, green, per doz.	—	Phoenix rupicola, each ..	12 6-21 0
Erica, white, 48's, per doz.	12 0-15 0	Solanum, 48's, per doz.	8 0-10 0
— pink, 48's, per doz.	10 0-12 0	Spiraea, white, per doz.	10 0-12 0
— thumbs, per doz.	3 6-6 0	— pink, per doz.	—
Ferns, in thumbs, per 100 ..	8 0-12 0	Tulips, scarlet, on bulbs, per doz.	1 3-1 6
— per 100, in small and large 60's ..	12 0-20 0	— white, on bulbs, per doz.	1 6 —
in 48's, per doz.	5 0-6 0		

REMARKS.—Business in this department is only moderate. Cinerarias and Genistas are included in the list of flowering plants. Good specimens of White Marguerites and White Spiraea are on sale.

Fruit. Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Apples—		Grape Fruit, per case	12 0-16 0
— Albemarle, per barrel ..	30 0-35 0	Grapes, English, black, per lb.	1 0-2 6
— Californian, per box ..	7 0-8 6	— Canon Hall, per lb.	3 6-8 0
— English cooking, per bus.	4 0-7 0	— Muscat, per lb.	8 0 —
— Nova Scotian, per barrel ..	14 0-25 0	— Almeria, per brl. of 60 lbs.	20 0-25 0
— Oregon, per box ..	9 0-12 0	Lemons, per case	12 6-20 0
— Wenatchee, per case ..	9 0-12 0	Lyches, per box	14 1-16
Apricots, Cape, per box ..	4 0-6 0	Nectarines, Cape, per box ..	4 0-7 0
Bananas, bunch—		Nuts, Brazil, new, per cwt.	65 0-70 0
— Medium ..	7 0-10 0	— Cocoanuts, per 100 ..	21 0-24 0
— X-medium ..	8 6-12 0	— Messina cobs, per bag ..	41 0
— Extra ..	10 6-14 0	Oranges, per case	12 0-40 0
— Double X ..	12 0-16 0	— Californian, seedless, per case ..	19 0-21 0
— Giant ..	15 0-16 0	Peaches, Cape ..	1 6-7 0
— Red, per ton ..	220 0 —	Pears, per case ..	20 0-24 0
— Jamaica, per ton ..	£140 —	— Cape ..	—
Chestnuts—		— stewing, per bus. ..	5 0-6 0
— Italian, per bag ..	20 0-22 0	Plums, Cape ..	3 0-6 0
— Spanish, per bag ..	10 0-12 0	Strawberries, forced, per lb.	6 0-10 0
Cobnuts, per lb. 0 5-0 6		Walnuts, French, per bag ..	8 0-10 0
Cranberries, per case ..	11 0-12 0		
Dates, per doz. boxes ..	5 6-6 0		

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes, Globe, per doz.	3 6-4 0	Celeriac, per doz.	3 0-4 6
— Jerusalem, per cwt.	4 0 —	Celery, per fan ..	0 9-1 6
Asparagus, Paris green ..	2 6-3 0	Chicory, per lb.	—
Aubergines, per doz.	—	Cucumbers, per doz.	8 0-15 0
Beetroot, per bus.	2 0-3 0	French Beans (Guernsey), per lb.	3 6 —
Beans, Broad, per pad ..	8 0	Garlic, per lb.	0 10-1 0
— Madeira ..	1 6-5 0	Greens, per bus.	1 6 —
Brussels Sprouts, per bus.	3 0-3 6	Herbs, per doz.	—
Cabbage, per tally ..	2 6-5 0	— bun. ..	2 0-6 0
Carrots, per doz.	2 6-3 6	Horseradish, per bundle ..	3 0-4 0
Cauliflowers, per tally ..	5 6-10 0	Leeks, per doz.	2 0-2 6
		Lettuce, Cabbage and Cos, per doz.	1 0-6 0

Vegetables: Average Wholesale Prices—Cont.

	s.d. s.d.		s.d. s.d.
Mushrooms, cultivated, per lb.	0 6-1 3	Rhubarb, Forced, per doz.	1 0-1 4
— Buttons ..	1 3-1 6	— natural, per doz.	6 0 —
Mustard and Cress, per doz. punnets ..	1 0 —	Savoy, per tally	3 6-6 0
Onions, English, per cwt.	12 0-14 0	Seakale, per doz. punnets ..	12 0-15 0
— spring, per doz. bun.	4 0 —	Shallots, per sieve ..	3 0-3 6
— Valencia, per case ..	13 0-14 0	Spinach, per bus.	3 6 —
Parsnips, per bus.	2 6 —	Tomatoes:—	
Potatoes, new ..	0 3 —	— Teneriffe, per bundle ..	14 0-18 0
— Algerian, p.l.b.	0 3 —	Turnips, per cwt.	4 0 —
— Channel Islands, per lb.	0 4-0 6	Turnip Tops, per bus.	1 6 —
Radishes, per doz. bun.	1 0-1 6	Watercress, per doz.	0 6 —

REMARKS.—The varieties of English Apples now obtainable are Blenheim Pippin, Bramley's Seedling, Newton Wonder, and Dumbleton's Seedling. Overseas varieties in boxes and barrels are still plentiful. Of Pears, the chief varieties at present available are Winter Nells and Easter Beurre. Williams' Bon Christian from the Cape will soon be coming to hand; the Cape fruits now arriving are chiefly Peaches, the supply of which exceeds the demand. English Grapes are still fairly plentiful for the time of year. Forced Strawberries are very scarce. Of forced vegetables, there are now available in fairly good quantities Asparagus, Beans (dwarf and broad), Seakale, Mushrooms, Potatoes, Cucumbers, and French salads. The supplies of Tomatoes from Teneriffe have been limited during the past week. Ordinary vegetables are plentiful, owing to the mildness of the season.—E. H. R., Covent Garden Market, January 26, 1916.

Potatoes.

	s.d. s.d.		s.d. s.d.
Bedford—		Lincoln—	
King Edward ..	4 6-5 0	Eclipse ..	4 6-4 9
Blackland ..	4 0-4 5	Evergood ..	4 0-4 6
Dunbar ..	6 3-6 9	King Edward ..	4 9-5 6
Kent—		Queen ..	4 6-5 3
Eclipse ..	4 6-5 0	Scotch—	
King Edward ..	5 0-5 3	King Edward ..	4 9-5 3
Queen ..	4 9-5 3		

REMARKS.—Trade is still very slow, and the supplies are greater than the demand. Edward J. Veitch, Covent Garden and St. Pancras, January 26, 1916.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending January 26.

The Fifth Unseasonably Warm Week in Succession. Another unseasonably warm week, and the fifth in succession. In fact, there has not been a single unseasonably cold day since December 21, or for over five weeks. On the one cold night of the past week the exposed thermometer registered 10° of frost, making this the coldest night as yet this month. The ground is at the present time 4° warmer than is seasonable both at 1 foot and 2 feet deep. Rain fell on four days, but to the total depth of little more than $\frac{1}{2}$ inch. Very nearly the whole of this moderate fall was deposited on one day, the 20th inst. During the week $\frac{1}{2}$ gallon of rain-water came through the bare soil percolation gauge, and $\frac{1}{2}$ gallon through that on which short grass is growing. The sun shone on an average for 2 hours 57 minutes a day, which is 11 hours a day longer than is usual in January. The first three days of the week were rather windy, but after that light airs alone prevailed. Since the beginning of December, or for eight weeks, the direction of the wind has been almost exclusively some point between south and west. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 10 per cent. F. M.

GARDENING APPOINTMENTS.

Mr. G. W. Lucas for the past eight years Gardener to the late Miss. LOCKER LAMPSON, Rowfant House, Crawley, Sussex, as Gardener to G. W. TYLER, Esq., Oakfield, Mortimer, Berks.

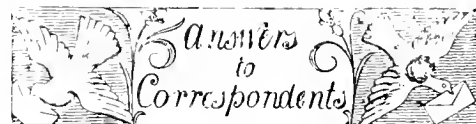
Mr. C. Davis, for 23 years Gardener to C. ERIC HAMBER, Esq., Pickhurst Mead, Hayes, Kent, as Gardener to Lady EVELYN CORRIOL, Holy Wells Park, Ipswich.

[Thanks for 2s. for R.G.O.F. box.—Eds.]

Mr. Frederick C. Legge, for the past seven years Gardener to W. MIDDLETON CAMPBELL, Esq., Fen Place, Turner Hill, Sussex, as Gardener to his Grace the Duke of Norfolk, Arundel Castle. [Thanks for 1s. for R.G.O.F. box.—Eds.]

Mr. J. A. Peskett, for the past three years and three months Gardener to HEATH HARRISON, Esq., Le Court, Liss, Hampshire, and previously for nine years Gardener to the late NATHANIEL BOND, Esq., Church Grange, Warham, Dorset, as Gardener to T. G. C. WHITAKER, Esq., Stansted Park, Emsworth, Sussex.

Mr. J. Hodgson for 12 months Gardener at "Lichie House," North Berwick, and previously for seven years Gardener to Lieut.-Colonel WOODBURN, Mount Annan, as Gardener to Captain HORN, St. Mary's Isle, Kirkcaldy.



APHIS ATTACKS ON FRUIT TREES: H. A. W. If the Apple trees on the two sides of the road-way came from the same nursery at the same time, and there was no difference in winter or summer spraying (if any) previous to 1914, the only cause of the difference in aphid infestation that seems possible is that eggs were deposited on the Gooseberries in the autumn of 1913. This does not seem probable, while it is still less probable that Strawberries can have any deterrent effect upon ovipositing aphides.

BOOK: H. A. Wallis. The volumes are only worth from sixpence to ninepence each. The coloured plates are of the poorest quality.

NAMES OF FRUITS: J. Selley, 1, Marie Louise; 2, Knight's Monarch; 3, Warner's King; 4, Allington Pippin; 5, King of the Pippins. A. W. G. 1, Blenheim Pippin; 2, Flower of Herts.—B. E. W. H. Hambleton deux Ans.—W. Thompson, 1, Imperial Apple; 2, Withington Fillbasket; 3, decayed; 4, Domino; 5, Lane's Prince Albert.—Correspondent, 1, Gascoyne's Scarlet; 2, King's Ace Pippin; 3, Newton Wonder; 4, Reinette Van Mons.—F. Coshaw, Worcester Pearmain.

NAMES OF PLANTS.—Moonraker, 1, Cypripedium Hicksonianum (Herax villosum); 2, Juno (Fairrieanum × callosum); 3, nitens (insigne × villosum).—A Lover of Flowers, Crinum giganteum.

ROSES FOR FORING: W. J. Hills. Pot Roses will flower in about twelve weeks from the time the plants are pruned and brought into the house, but it is well to allow even a little more time, as it is not wise to force rapidly. You should prune the plants at once, and place them in a temperature of about 45° by night and 50° to 55° by day, increasing this to 55° by night and 60° by day as growth develops. As the sun gains in power the temperature may rise to 70° and 75° without causing harm; but on warm days turn off or reduce the fire-heat early in the day. Syringe the plants freely on bright mornings at about 10 a.m., and see that the soil is in a moist condition, but on no account water the roots too freely in the early stages of growth. Plants on the seedling briar will, if established, grow as successfully as the other plants.

SHRUBS: W. B. The specimen of Berberis aquifolium is interesting, as we have never seen one like it before, the leaf-like bracts on the flower-spikes being uncommon. The dwarf form of Berberis Darwinii is not new, but the piece you send seems smaller in all its parts than the usual B. Darwinii var. nana. It should form a useful, neat plant for edging, of which there are none too many. The Veronica might be of service for window-boxes. The dwarf seedling form of Cupressus macrocarpa is interesting, though we are inclined to think that it is one of the Retinisporas, being very similar to R. Sanderi. This class of plant is very difficult to determine in a juvenile state. We should advise you to propagate it.

Communications Received.—W. E.—W. L.—A. J. B.—A. J. K. and Sons.—F. W. M.—A. J. S.—G. H.—A. B. G.—M. C. A.—C. H. M.—J. A. Whitehead—H. W. K.—B. F.—G. B.—H. G. P.—J. Mack—G. M.—L. S. R. A. S.—J. H.

* * NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of $\frac{1}{2}$ d. every two ounces.

THE

Gardeners' Chronicle

No. 1519.—SATURDAY, FEBRUARY 5, 1916.

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NOTES FROM A COTSWOLD GARDEN.

SOME excuse must be given for these notes, which, so far as my time allows, I propose to continue at short intervals; because most of the readers of the *Gardeners' Chronicle* have already read a good deal about a Gloucestershire garden at Bitton, much more famous, and much more favoured by Nature as regards soil and climate, than my own. But I have derived so much pleasure and so much knowledge from reading both Canon Ellacombe's* and Mr. Bowles' books† that I hope something may be gathered from my notes worth remembering.

I must begin by saying that Colesborne is situated at an elevation of about 550 feet near the bottom of a valley where the infant Thames is joined by its first tributary the Churn; this situation will explain to some extent why Colesborne is subject to such terrible frosts late in spring and early in autumn, which together with the very shallow and limy oolitic soil, make it impossible to grow many hardy plants which flourish in more favoured gardens. Notwithstanding these drawbacks I have succeeded in growing plants collected by myself in Europe, Asia, and America, or given me by numerous friends, which are not to be found everywhere; and I can say with some assurance that what will live at Colesborne will live almost anywhere in Great Britain.

After the coldest November that I can remember, followed by nearly the wettest December on record here—over seven inches of rain having been registered—the new year came in with a spell of very mild weather, which seems to have made many plants wake up unusually early; and the wheat sown in October,

which lay dormant in the ground so long that I feared there would be a very thin crop, now at last shows green in the fields. A very heavy gale recently blew down a number of fine old elms which sheltered my house and garden from the north wind, and these will be difficult and costly to remove. Some of them are broken off half-way up, and some are torn up by the roots, which now stand 6 or 8 feet above the ground. Happily I shall be able to replace them by young trees from my nursery raised from suckers of the true English elm; a tree which for the size, beauty and quality of its timber is, in the valleys of the Thames and Severn, unequalled by any other elm or any other tree. As this variety of elm is peculiar to the southern half of England, and, as I have shown in *The Trees of Great Britain and Ireland*, cannot be reproduced by any other means, I hope that others who may admire and value it as much as it deserves will carefully read and act upon what has been written on the subject of its propagation in the seventh volume of the work in question; because nurserymen have been very careless about their methods of propagation, and it is hardly possible to buy a true English elm on its own roots. Shortly before the war I was asked by the greatest nursery firm in Germany where to obtain such trees, and I could not give the information required.

The only hardy plants which I can say were continuously in flower during November and December are *Sternbergia lutea* var., known in gardens as *angustifolia*, whose bright yellow flowers endure all weather with impunity; and *Lithospermum rosmarinifolium*. The latter, though reputed tender, has withstood 20° of frost under a handlight in November, probably owing to the very good drainage, and still continues in bloom. Coming from so far south as Sicily, this is very strange; for *Iris unguicularis* (more commonly known as *stylosa*), which in many gardens is in flower all through the winter, will hardly flower here before February or March. Many species of *Crocus* have attempted at various times throughout the winter to open their flowers, but there has been until recently no day warm and sunny enough to allow their delicate flowers to open properly even with a glass over them. But *Crocus Imperati*, though usually not fully out until February, made a brave attempt to open a fortnight ago, whilst *C. Boryi*, *C. Crewii* and *C. Fleischeri*, which I brought from the Levant more than forty years ago, are all so beautiful that they are worth growing in pots to bring indoors in bud, when the warmth will open their flowers in a sunny window. A tiny rarity, which was brought from Mount Ida in Crete by my friend Mr. Trevor-Battye, is *Crocus Veneris*; but Mr. Bowles has told us so much about these little gems that I will say no more at present. Just before the war I ordered from Siehe at Mersina some of the bulbs which the Cilician Taurus produces in such variety and abundance, and as they did not arrive till November, very much dried up, I planted them in a

cold frame. Now I have in full beauty *Galanthus cilicicus*, which I think can only be considered as a Far Eastern form of *G. nivalis*, flowering about six weeks earlier, and in some cases with flowers twice as large. *Galanthus Elwesii*, sent by Siehe as *G. robustus praecox*, by some nurseries sold as *G. robustus*, is also out, but not so large or robust as, and very little earlier than, my own home-raised seedlings of that very variable species. I may say that seedlings of *G. Elwesii* are at Colesborne far more satisfactory, and often finer in flower than imported bulbs, which more often perish after seeding than not; but I never see seeds on the common *Snowdrop* or its much finer and earlier form, *G. Imperati*. Though the latter was well through the ground by the middle of January, the only other *Snowdrop* then in flower was *G. plicatus*, which, though it does not thrive in my soil, and often dies out, has come up in two places where it was certainly not planted; one close to the foot of an Irish yew, where no moisture can remain long even in winter; the other against the brick edging of a cinder path behind the frames, from which it may have escaped. Other plants from Cilicia which are in bud, but waiting for a hot sun to open them properly, are *Xiphion Danfordiae* with yellow, and *Colchicum hydrophyllum* with purple flowers, but neither is so good as *Xiphion tauri* and *Colchicum libanoticum*, whose numerous white flowers are now very pretty in the Alpine House at Kew.

I have been so much impressed by the advantage of having a house in which to show, and in some cases to grow, many little gems which flower too early or too late, or which are too tender for our climate, and also by the pleasure of seeing them under one's nose, without having to crawl and stoop about a rockery or over a frame, that just before the war I indulged in the luxury of a long, low, unheated house of my own; and though I have yet much to learn about the best way of treating such plants under glass as Sir Everard Hambro does, I am so far very well satisfied with the results. In it one may grow many plants which will not grow, or will only grow for a time, on the most carefully built rockery; and one can enjoy them, however bad the weather may be—some planted out, some in pots, some shaded, and some in the full sun. The lights on one side of my house are all made to slide off whenever it is thought desirable; and one can group the plants according to their resting seasons, and the amount of shade and water they require; but it is yet too soon to judge whether this system will prove as great a success as I hope. Into this house I have brought a selection of the encrusted Saxifrages, several of which are now in bud; but the only two which can be said to be fully out are *S. Boydii alba* and *S. Burseriana* major, of which, perhaps, the best form I have seen is one raised at the Guildford Hardy Plant Nursery. In this house I hope to compare them much better than when planted out, and to eliminate all but the best of the numerous hybrid

* In a Gloucestershire Garden.

† "My Garden" series, in 3 vols.

Saxifrages, mostly "made in Germany," which are overcrowding our lists. Here also I hope to be able to rest those species of *Primula* and other high alpinists which require it. In the same building alpinists and bulbs from the Himalayas, Mexico, the Andes and Colorado can be roasted if and when they seem to want it; and if I could afford a refrigerating plant in one of the three sections into which the house is divided, I would even venture on such things as *Eritrichium nanum* with more hope of success. I may also hope to rival, but certainly not to excel, my friends, Messrs. St. Quintin and Meade-Waldo, in the culture of terrestrial Orchids from the Mediterranean region, when peace at last comes to those sorely troubled seas; and in this house I hope to take refuge from blizzards, thunderstorms, and east winds, when I am too old and feeble to face the elements, and enjoy the only pleasure which remains undiminished as long as a man's sight lasts.

to require more room than its moderate beauty deserves.

Of Primroses the only species besides the Wild Primrose yet in flower are *P. megaseaeifolia*, which is by no means a satisfactory plant at Colesborne either inside or out, and *P. capitata*, of which a plant in full flower outside in November was potted up after 18 degrees of frost, and is now opening fresh flower spikes in the alpine house, whilst seedlings sown in June last are also flowering prematurely in their pan. But *P. malacoides* self-sown in the path of a cold house is a mass of bloom, and bids fair to be the parent of some very good hybrids, if not of a new race of hardy Primulas.

Of cool-house plants, mostly from South Africa and the Himalayas, which are now in flower, and which, though very seldom seen, might be grown by every amateur without special knowledge, I forbear to speak at present. *H. J. Elwes.*

him the material which he enclosed, viz., fruit and foliage. This I showed to Dr. Henry. The foliage much resembled that of *Libocedrus macrolepis*; the cones, however, were apparently those of a *Cupressus*. As the cones were not attached to the branchlets, and may have fallen from an adjacent tree, Dr. Henry asked me again through my brother to obtain more material, with the fruit growing on the branchlets. This in due course, thanks to Captain Hodgins, arrived, sealed by my brother with a note from him: "To be opened by Dr. Henry only." These specimens, which I forwarded to Dr. Henry, have been described by him*, also by myself, together with an illustration showing foliage, fruit and seed. I have recently received from Captain Hodgins photographs (see figs. 30 and 31) of this new Conifer growing near Foochow.

In 1909 my brother received two small trees of this Conifer from Captain Hodgins, which were sent to England in charge of Commander Osborn, of H.M.S. "Hawke." One of these I presented to Kew in 1911, the other I have in cultivation, a small tree about 4 feet high, healthy, but growing slowly. It is propagated from cuttings fairly early. *H. Clinton Baker.*



FIG. 30.—*FOKIENTIA HODGINSII*, A NEW CHINESE SPECIES.

Among the plants which flower outside in the dead of winter, and are now well in bloom, are the well-known Winter Heliotrope, *Petasites fragrans*, which I only mention in order to suggest the potting of the flowering growths, to bring indoors, where their fragrance is better enjoyed than outside. Another *Petasites*, which I got under the name of *japonicus*, is figured in *Bot. Mag.*, tab. 8,032, and is now in full flower. It is quite distinct from one that I saw labelled *P. nivea* in Mr. Bowles' garden recently, and though much larger than its European representative, seems to have no fragrance, and to be, on account of its spreading habit both in wet or dry ground, and its gigantic leaves,

NEW OR NOTEWORTHY PLANTS.

FOKIENTIA HODGINSII (A. HENRY AND H. H. THOMAS)

In 1909 Dr. Henry suggested that I should write to my brother, who was then Flag-Captain of H.M.S. "King Alfred," China Station, asking him, should he meet Capt. Hodgins, s.s. "Haiyang," to collect and send me fruiting specimens of a new Conifer he had found near Foochow. A few months later I received a letter from my brother to the effect that he knew Captain Hodgins, who had kindly given

MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.†

XXVIII. THE ALPS IN JULY.

Now the heights are beginning to reveal their possibilities, and we are making preparations to move up into camp beside the shore of a little green lake far up in the recesses of the peaks, set in green banks of turf so dense with *Meconopsis quintuplinervis* that of this plant and its marvellous loveliness I will not now dare to speak, until I can at length reintroduce it adequately to your notice, with a picture that shall shed scorn on the squinty bells that we were so proud of having successfully photographed last year on Thundercrown in one of Thundercrown's eponymous gales. But now is due time to show you the *Isopyrum* (see fig. 32), which, still in bloom in the valley, is already forming cushions of colour in the highest rocks at 15,000 feet or so. Colours are pale, and words bloodless, to give a notion of the plant: for this, if for nothing else, it is well worth while to have visited the Da-Tung Alps. At first I fancied it preferred limestone; but now, though specially lavish on the limestone, it is hardly less so everywhere else, from 11,000 feet to the highest tops (not, for instance, descending so far down the valley as Wolvesden House). At first I fancied, too, that it particularly affected dark and shady cliffs; but, though these are, indeed, its favourite haunts in valleys and gulleys, up above on the open crags it forms masses quite as cushiony and happy, though closer and more compact. But, always and everywhere, it is only a child of the rocks, as saxatile as *Phyteuma comosum*: a shelving cliff-face filled with waving tussocks of great flowers in every lavender shade to amethyst and turquoise is certainly one of the most bewilderingly delightful spectacles that even the Alps of China have to offer. I have seen no albinos; nor wanted any.

Summer, too, has unfolded the huge *Primula* that I spoke of before as *P. "moesta,"* but which I now hope (if not *P. sinopurpurea*) may bear a more personal name. Nor is it "*moesta*" as it develops, but opulent, flaunting and almost overpowering in its fat-headed lushness, over-weighted as it is with the excessive amplitude of its grey-powdered foliage. Though of typical

* *Trees of Great Britain and Ireland*, Vol. V., p. 1150.

† *Illustrations of Conifers*, Vol. III., p. 85.

‡ The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 31, November 14 and 28, 1914, January 2, February 27, March 10, April 10 and 24, May 1, 15 and 29, and June 12 and 19, July 3 and 10, November 13, 20 and 27, December 11 and 25, 1915, and January 8, 15, 22 and 29, 1916.

nivalis habit, it has a much fuller and freer root system than I had at first imagined, from specimens hewed untimely out of frozen ground; so that I nurse rosier hopes of its future in cultivation. But its habits and habitats will require careful studying. For a plant of such leek-like shank and full habit, it is astonishingly saxatile, often inhabiting crannies so tight that you would hardly think them capable of harbouring *P. Allionii*. But always, wherever you find it, in crevice or deep gully, it is invariably restricted to cool, moist and shady situations. Deep in the dark little cañons of the high cliffs, from 12,000 feet to the tops, it forms gardens of strangely artificial effect. Indeed, I have seldom seen a flower so unnatural in its look, whether it be growing in a colony or in isolated specimens. It always has the air of having been bedded out in a Chelsea rock-garden, each crown dibbled neatly in, four inches from its neighbour, and opulently conscious that, war or no war, it is not going to change hands under twenty-one shillings. Again and again have we tried to get a simple and natural-looking photograph; the plant will not permit it, and the only plate that appeared at all spontaneous was the one in which we ourselves had carefully grouped the specimens. Anyhow, no photograph could give the strange, ghostly beauty of the blossom, which, opening of a lavender-blue with basal double blotch of white to each lobe, gradually fades to a uniform pale moonlit grey, enhanced by the deep claret purple of the calyx, throat, and eye. This *Primula* seems to have no fads about its rock, but clearly insists on coolness, moisture and shade. If it does not prove as vigorous in cultivation as its looks and rootage seem to promise, the problem will consist rather in keeping it bone-dry in winter; in summer a deep chink between rocks, in moist gritty soil unoccupied by rivals, should surely make it perfectly content.

One's cry, however, having seen one *Primula* and got it recorded, is for a new one. And the answer of the Da-Tung is not generous. There is too much of lovely *P. stenocalyx*, perpetually deluding you from all sorts of unlikely situations, with hopes of a novelty. There is far too much of not-nearly-so-lovely *P. blattea* (No. 8 of last year), which is also not nearly so fine in form as on Thundercrown, and of a much more vinous shade of purple. Vainly and long we quested fresh beauties on the main mass (for *P. urticifolia* does seem almost, if not wholly, restricted to the calcareous outcrops). The *P. acclamata* form is, indeed, very handsome, with large solid flowers of a solid mauve-pink; but *acclamata* had been already "bagged," so where was the use of it now, beautiful though it is on the Alps, in the barer steps and ridges of the turf down? However, at last our toil was rewarded with what I hope may prove a good new species, and a singularly charming one into the bargain. At first, from the elevation and locality, I thought it must be *P. pumilio*, but every point of the diagnosis makes dead against such an identification, for here there are no dense cushions, no sessile scape, no shortened pedicels, no oval bracts, no tiny flowers; on the contrary, the flowers are big for the wee plant, which is a little clump or tuft of plants, the scape is evident, the pedicels and bracts quite conspicuously elongate. Not, however, to trouble you untimely with such problems, I can only say that this is a little beauty of the rarest charm, with blossoms of a rich rose pink almost as brilliant as in *P. rosea*, and enhanced by a solid round rim of gold to the eye. It sparkles irresistibly all over the pale bare turf of the very highest moors and ridges, from 15,000-15,000 feet, dotted here and there in scattered jewelleries of colour which quite distract one from the deliciously fragrant *Erysimum* there also occurring, and most tantalisingly suggesting from afar some stalwart new *Primula* in the *farinosa* group. The little pink treasure, though, I should assign rather to the cousinhood of *P. sibirica*; indeed, it has a look

of the glowing little *sibirica*-form of the lowland marshes in this chain; but squashed almost flat to the ground, and wholly lacking the saccate bracts which are essential to every would-be *P. sibirica*. In any case it stands very high, for exquisite charm, among the *Primulas* I have met in China, which, irrespective of temper, I should rank for delightfulness as follows:—*Optata* (No. 10), *Reginella*, *hylocola* (No. 1), *citrina* (error, *flava*) *stenocalyx*, *alsophila* (No. 15), *acclamata* (No. 15), *Farreri blattea* (No. 8), *Viola-grandis* (No. 5), *kansuensis*, *urticifolia*, "*Loczii*," *conspersa sibirica*, *lichiangensis*; remembering that I have not seen *Pardomii* or *Maximowiczii* in bloom, and that *taugutica* is so hideous as to be over-honoured by inclusion even in the tail of this list, though in this district so tall and stalwart as to make its mean ugliness of flower yet more conspicuous and deplorable. *Reginald Farrer.*

The authors of *Design in Landscape Gardening* say: "To such a garden-loving race as the English we must go to find out what gardens really can do for a man and his home."

And, speaking of the United States, they add: "In a country where gardens are the exception rather than the rule it is disappointing to find that the existing specimens are not always such as would inspire a man to acquire one of his own. . . . Nevertheless, an intelligent interest in gardens is daily growing stronger, and our gardens are not so few and far between or as unfortunately conceived as they were a few years ago."

America is the melting-pot of so many peoples that anything like a national attitude towards a particular art is impossible. It is certain, however, that if decorative gardening is to play the important part that it does in English life, it



FIG. 31.—*FORSTIA HODGINSII* NEAR FOCHOW, CHINA.
(See page 72.)

NOTICES OF BOOKS.

"DESIGN IN LANDSCAPE GARDENING."

In the United States a great era is opening for architecture, an art in which American genius, developed in the schools of France, is at its happiest. Beautiful gardens are the natural sequel to fine buildings, and the models of England meet with much appreciation.

• *Design in Landscape Gardening.* By Ralph Rodney Root and Charles Fehens Kelly, A.R. (The Century Co. Price \$2.00.)

must be rooted in a general understanding of its principles.

To attain a high standard in gardening requires more intimate knowledge among its patrons than many other arts—than architecture, for instance—in which the owner may with some measure of safety trust to the artist. The fame of a garden is the perquisite of the proprietor, and the maintenance of its beauty is his responsibility.

It is evidently important just now in America to educate popular taste. If this aim is not

achieved it will not be the fault of the holders of the many professorships of landscape gardening who are conducting an enlightened propaganda, of which the book before us is an admirable illustration.

The work is based on a series of lectures delivered at Illinois University, and solves many of the difficulties which perplex the student of landscape gardening. The principal treatise explains the principles of design, and analyses effectively the relationship between landscape gardening and other arts.

The authors succeed in clearing much of the fog which too often surrounds these aspects of gardening. They submit valuable essays on "Colour and Planting" and other subjects without unnecessary verbiage and full of sensible suggestions.

"Problems" range from the development of garden cities to the construction of golf courses, and this chapter includes a novel proposal for the co-operative control of street gardens back to the "lot-line," by improvement committees.

The authors indicate in many ways their knowledge of the difficulties of practice. For example, "Every design has natural limitations which clip the wings of imagination, and the tastes of a client who has little or no education along æsthetic lines is a limitation second to none." A very poignant cry!

One or two generalisations are perhaps a little sweeping. "All true beauty is functional" is an invitation to argument which I have not space to accept. One may ask, however, what is the function of a lovely atmospheric effect?

Most American books are interesting if only for the contributions they make to our vocabulary. This work contains some typical examples. I respectfully hope, however, that "to function" will not become a popular verb in the English language. It is good for gardening that the acute American mind should turn its possibilities inside out, especially as for the present we English have little that is new to say.

Altogether this book is a thoughtful contribution to garden literature, and is a reminder that we shall yet have something to learn from America in garden art. The volume contains many admirable pictures and plans. *E. H.*

ORCHID NOTES AND CLEANINGS.

LAELIO-CATTLEYA HADDONII.

Mr. H. Haddon, gardener to J. J. Neale, Esq., Lynwood, Penarth, sends a flower of *Laelio-Cattleya Haddonii*, raised by crossing *Laelia Perrinii* with the pollen of *Laelio-Cattleya luminosa* (*L. tenebrosa* × *C. Dowiana aurea*). In colour the bloom is very close to *L. Perrinii*, and in size equal to *L. tenebrosa*. The sepals and petals are white, tinged and veined with light purple, the basal part of the lip being similarly coloured, the front dark vinous purple. Doubt has been expressed as to the correctness of the cross, but Mr. Haddon says that it was the only one he made with *L. Perrinii*, and a mistake in the record cannot have been made. It is known that in all first crosses of *L. Perrinii* that species dominates, and in the expansion and form of the lip front there appears to be distinct traces of *C. Dowiana aurea*, inherited from *L. C. luminosa*. The pollinia, four fully and four half developed, clearly show that there is *Cattleya* in its composition. *Laelia Perrinii* crosses are not very showy, but they flower in the winter, and this fact increases their value.

Laelio-Cattleya Lynwood (*L. Jongheana* × *C. Lawrenceana*), a pretty rosy-lilac flower with ruby-chestnut front to the lip, is also sent by the same raiser.

The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge House, Wantage, Berkshire.

HYDRANGEA HORTENSIS.—A batch of this useful flowering plant may be started into growth. Examine each specimen carefully and cut away weak, useless wood. Any repotting necessary may be done now. Do not over-pot the blue-flowered varieties or the colour will be a poor shade. Plants which do not need repotting should be top-dressed with a rich compost. Cuttings which were struck last autumn may be shifted into 5-inch pots. If the cuttings were well ripened when inserted most of them should flower this season.

SALVIA SPLENDENS.—Insert cuttings of *Salvia splendens*. This plant is subject to attacks of red spider and aphid, hence it will be wise to dip the cuttings in an insecticide before inserting them. Fill a quantity of 4-inch pots with a compost consisting of sifted loam, leaf-mould and coarse sand, making it fairly firm. Then, by means of a dibber, insert the cuttings around the sides of the pots. Plunge the cutting pots in a propagating case after watering the soil thoroughly, and shade the cuttings from bright sunshine until they are rooted. When they have made sufficient roots shift them into 3½ inch pots, and keep them growing freely in a moderately warm house. Promote a moist atmosphere by frequently damping the bare surfaces, and syringe the plants twice daily as a precaution against red spider. The variety *Fire Ball* makes an excellent pot-plant, and is easily raised from seed sown now.

SALVIA PITCHERI.—This beautiful *Salvia* is not grown so extensively as its merits deserve: it makes a very striking contrast when associated with *Chrysanthemums* during the autumn. Cuttings root readily in cold frames if kept close, and shaded from bright sunshine. Insert five or six cuttings around the side of a 5-inch pot filled with sandy soil. When the pots are filled with roots shift the plants into 7-inch pots, using a compost consisting of loam, leaf-mould, manure from an old Mushroom bed, and coarse sand. Some of the more promising of the old plants may have the soil shaken from their roots, and be repotted.

HUMEA ELEGANS.—Plants of *Humea elegans* raised from seed sown last year are ready for their final potting. A suitable compost for this plant consists of a mixture of good fibrous loam, leaf-mould, manure from an old Mushroom bed, lime rubble, and coarse sand. Pot firmly, and stand the receptacles on a cool bottom in a cool house. Water the roots with extra care until they have grown well in the new soil, and do not attempt to hasten growth by forcing, or failure will result.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

THE FIG. In the colder parts of the country it is usually advisable to protect Fig trees during times of severe frosts, and although the weather is extremely mild, it is well to be prepared for a sudden change to wintry conditions, and to have the necessary material ready for use. Fig trees that have been treated properly during the growing season—that is, kept free of superfluous growths—are much better able to withstand a moderate amount of frost than otherwise, for the shoots will ripen properly, and usually go through the winter without injury. Trees that have made gross growth and borne few or no fruits should be examined at the roots to see if they are growing extensively in a rich medium. If such be the case, root-pruning must be practised. Cut a deep trench 3 or 4 feet from the wall, severing the stronger roots with a

sharp knife, and removing entirely all that are growing in the subsoil. The roots should afterwards be restricted to a smaller rooting space, either by a retaining wall or by filling in the trench with stones, chalk, or poor soil, ramming the materials as tightly as possible. This treatment will result in a more moderate amount of growth, and the shoots will ripen well, eventually producing an abundance of fruit. When it is intended to plant Fig trees in the spring, the border should be prepared in order that there may be no delay in the work when a favourable opportunity for planting presents itself. In this case a narrow border should be made in such a manner that the roots will be restricted from the first. Do not use rich soil or manure, as it is better practice to resort to feeding when the trees are bearing full crops. Ordinary garden soil is suitable, and it should be mixed with a goodly quantity of old mortar rubble, chalk, and wood ash or charcoal. A warm, light, porous soil is best suited to the Fig, and efficient drainage is essential. When planting make the soil very firm by ramming it.

SPRAYING FRUIT TREES.—The spraying of fruit trees should be done forthwith, as the mild weather is causing the buds to swell rapidly. The safest plan is to get the trees sprayed as soon as the winter pruning is completed. Choose a mild, calm day for spraying, as much of the fluid will be wasted if there is a high wind, and there will be a danger at such times of the operator getting some of the specific on his face. The workman should wear rubber gloves and old clothes when using caustic washes. See that the fluid reaches every part of the tree, and that it enters crevices or rough places in the trunk or main branches, which form lurking-places for insect pests. Concentrated alkali wash is an excellent winter wash, and has been used for the purpose for many years. Where trees have been overlooked in the matter of spraying, and a strong wash is required, this preparation is to be recommended. It will effectually clear the trees of mossy growth, and leave the bark after a little time in a clean, shiny condition. This specific is sold in tins of a convenient size for gardens small and large, and in ordinary conditions is much more satisfactory to use in private establishments than home-made washes.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

VINERY.—If the fruit bunches on pot vines were reduced to a suitable number before they flowered, the berries on those retained should be thinned at once, for after a certain stage every day's delay in thinning will mean loss in the size of berries. After the Grapes are thinned and when the berries are swelling freely, top-dress the roots with rough turf mixed with vine manure, and feed them with diluted liquid manure. Keep the evaporating pans filled with water, syringe the walls and paths, and occasionally damp down with diluted liquid manure, but see that this stimulant is not used at too great a strength, or it will injure the tender leaves. When the shoots have been tied to the trellis and regulated, pinch out the superfluous laterals, and repinch the others at the first leaf. Ventilation will require careful attention, as the slightest check to growth must be prevented. Admit a little fresh air when the temperature is 75°, and gradually increase or reduce it, as the case may be, until the heat stands at 80°. In the afternoon gradually reduce the amount of ventilation, and close the house in time to secure a rise to 85°, with atmospheric moisture, assisted by gentle warmth in the pipes.

"CUT-BACK" VINES.—Pot Vines that were pruned hard back in December and have grown since in gentle warmth are breaking into growth, and must be encouraged to develop by light syringing with tepid water. When the new growths are about two inches long the plants should be partially shaken free of the old soil and repotted. The compost, consisting of good loam, bone-meal and lime-rubble, should be prepared in advance, and warmed through before it is used. Plunge the

pots in a steady bottom heat of 75°; the moisture from the hot-bed, with daily syringing, will keep the soil moist enough until fresh roots form. Retain the stronger shoot where two have started, and secure it to a light stake to guard against accident.

YOUNG VINES.—Vine eyes started last month will require a bottom heat of 75°, and a close, humid atmosphere, but on no account must the soil be excessively wet. Use a similar compost to that recommended above, and 7-inch pots if the vines are required for planting out in May.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

ARTICHOKES. Lift the entire crop of Artichokes, storing the best tubers in a clamp, and selecting those of a medium size for replanting. Cultivate the ground thoroughly, incorporating a quantity of rich manure as the digging proceeds. Plant in rows made 2 feet 6 inches apart, allowing a space of 18 inches between the tubers in the rows.

BRUSSELS SPROUTS.—Sow seeds of Brussels Sprouts to raise plants for early supplies. Germinate the seed and grow the seedlings in cool conditions, thus ensuring strong, sturdy plants. Early Dwarf Gem is a suitable variety.

CELERY.—A sowing of Celery for early plants may be made thinly in boxes or pans filled with light, rich soil, riddled finely. Germinate the seed in a temperature of 65°, removing the seed-pans to a cooler structure after they have germinated. A mild hotbed on which a few inches of the soil recommended above has been placed will provide a good seed-bed. The seedlings may be pricked out on a similar bed when they are large enough for transference. The atmospheric conditions produced by the escape of vapour from fermenting materials are ideal for Celery, similar genial conditions being difficult to produce by other means.

HERBS.—Overhaul the herb border, lifting half the perennial kinds. Well dig and manure the beds, dividing and replanting suitable portions of the plants. Space should be allowed for sowing the annual kinds in March or April. Sage and common Thyme may be grown as annuals.

GARDEN PATHS.—After the completion of the work of heavy carting, undertake repairs to gravel and grass paths, replacing worn and bare spaces in the latter with fresh turves. Gravel walks could be more advantageously repaired at the cessation of hard frost, but the probable increased shortage of labour precludes the possibility of deferring any work that may be performed now.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

RAISING ORCHIDS FROM SEED.—From now onwards seeds of Orchids may be sown, the longer days and the additional solar warmth rendering success more sure, while seedlings raised at this period of the year are more robust than those germinated in November or December. For raising Cattleyas and allied genera, special heated cases or small frames are employed, but if these are not available an ordinary propagating case will provide an excellent substitute. The object is to maintain as equable a temperature as possible, say, about 80° F., and to prevent evaporation of moisture, thus obviating the need for frequent waterings, which are not desirable, as both seeds and seedlings in their early stages are easily disturbed in the soil by heavy waterings. Probably more failures arise from this cause than from any other, especially with the beginner. Sow the seed in prepared pots or small pans, filling each receptacle one-third of its depth with drainage material. A piece of coarse calico, canvas, or cheese-cloth about four inches in diameter should be laid on the hand and filled with the usual compost of finely-chopped Sphagnum-moss.

Pull the edges of the fabric around the soil so as to form a ball, and let this be pressed tightly in the pot or pan. The surface should be half an inch below the rim; the sides may be filled with a little fine Sphagnum-moss. Occasionally the use of Sphagnum is an advantage, because the seed sometimes germinates on the moss, and not on the canvas, while the reverse also happens in other instances. Water the soil sufficiently to moisten the whole of it, and then place the pan in a warm house a few hours before sowing the seed. Several pots of each kind should be sown, and a label attached, giving the number which corresponds with that in the seed book. Sow thinly and evenly, and then place the pots in the heated case or frame. Keep the surroundings moist, and never allow the soil to become dry. A fine sprayer may be used for watering. In addition to Cattleya, Laelia-Cattleya, Epidendrum, Dendrobium, all hybrids of Brassavola, and other epiphytal Orchids may be raised in this way. Terrestrial species and hybrids are best sown around a plant belonging to the same genus. For example, take Cypripedium. Select as a host plant one that will not require repotting for at least twelve months, with sweet soil free from large heads of Sphagnum-moss. Several pots should be sown with the same kind of seed, because, for some inexplicable reason, it sometimes happens that the seed in one pot only germinates. Calanthe seed may be sown directly it is ripe in pots containing Calanthes which have been repotted. Make the soil fairly firm and water carefully. Odontoglossums were formerly considered difficult to raise from seed, but seedlings are now raised in quantity. Except perhaps during the dullest part of the year, Odontoglossum and Odontiodon seed should be sown as soon as it is ripe. Choose plants of the same genera—preferably growing seedlings—as host plants for seed-sowing. Cut away all growing Sphagnum-moss, and remove any foreign growth that would be likely to smother tiny seedlings. Give the selected plants a good watering, and when the excess of moisture has drained away sow the seed evenly on the surface. Never allow them to become dry, and, as the sun increases in power, keep the atmosphere moderately moist, using a thin shading when necessary. The house should be vaporised at intervals to destroy thrips and to hold in check a small fly which is often a source of trouble.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOVEZ, Ellisfield Manor, Basingstoke, Hampshire.

SOME GOOD CLIMBERS FOR WALLS.—There is a wide range of choice flowering and foliage plants suitable for covering walls. Of self-clinging subjects there is nothing to equal Ivy and Ampelopsis, which in their several varieties may be used with good effect in many positions. A special point should be made of including the winter Jasmine in the collection, as the yellow blossoms are ornamental at a dull season of the year. The common Pyrus japonica should be planted in a sheltered nook for the same reason. Many of the old-fashioned climbing Roses are eminently suited for walls, and give a rich harvest of flowers, but those of the newer rambling type are unfortunately very prone to develop mildew when grown against walls; and as there are many other places in the garden suitable for these Roses it would obviously be unwise to use them as wall plants. Clematis montana is a fine subject for draping a wall, and may be allowed to escape over the top and hang down the other side. No more imposing subject for a wall can be suggested than the Wistaria, and it is especially effective when allowed to roam along the top and to become associated with the beautiful Laburnum Vossii. Vitis purpurea gives rich autumn tints, and in favourable seasons, a beautiful crop of purple Grapes, which can, if desired, be made into an excellent wine. Its congener, Vitis Coignetiae, is a rampant grower, but this is no disadvantage, for thereby it gives us more of its expansive and deeply-embossed foliage. It also does remarkably well trained up the pillar of a pergola. Actinidia chinensis is another fine foliage

plant which does well on walls or pillars if the situation is not too much exposed. Ceanothus Veitchianus and C. azureus are both useful wall plants; the former gives the better display in this position. The old-fashioned Honeysuckle, so often seen over cottage porches is well worthy of a place in more pretentious gardens. Schizophragma hydrangeoides is a useful subject for walls, and is partly self-clinging; it is known as the climbing Hydrangea. A sheltered corner should be found for Lippia citriodora, the lemon-scented Verbeena, but it needs a covering to protect it during times of severe frosts. Prunus triloba and Kerria japonica give fine shows of spring flowers, and are well adapted for furnishing low walls. Choisya ternata makes a pretty subject for the angle formed by two walls, breaking the formality. When established the plant will give a wealth of flowers. Buddleia globosa, though pretty and of easy culture, loses by comparison with B. variabilis, but it should be included. All these subjects may be planted at the present time; make the holes sufficiently deep and wide to accommodate the roots without crowding, see that the drainage is perfect, and fill the hole with rich, sweet soil. To obtain the utmost beauty from wall trees and shrubs they should not be trained closely to the walls as fruit trees, but only a sufficient number of the shoots secured to keep the plants in position, and the younger flowering shoots allowed to grow from the wall. This displays the flowers and especially the habit of the plants to greater advantage, and breaks the straightness of the wall in an artistic manner.

THE APIARY.

By CHLORIS.

WINTER WORK. All beekeepers know that when the honey flow begins there is little time to prepare frames and sections, and those got ready under stress of work rarely give satisfaction. Frames should be got ready by fixing in the full sheets of foundation, worker base (eight sheets to the pound is best for all purposes), by wiring them in according to the whim of the apiarist, not forgetting to make the foundation secure to the top bar by molten wax. There is no economy in using starters, for the bees make an undue proportion of drone cells in the space left at their disposal, and it should be the aim of the beekeeper to have as few drone cells as possible. Sections take a considerable time to fit up. Take 21 split-top sections in the flat and carefully moisten the joints (not more) with boiling water, piling them up as they are wetted, then overturn in order to begin with that first prepared. Take extra thin foundation with worker base, and with a template cut off enough to nearly fill a section, i.e., so that the comb will barely touch the sides and not reach within a quarter of an inch of the bottom. Now fold the sections, leaving one half of the top unfastened, place in the foundation so that a little wax will protrude above the top, then fold down the unfixed portion. In order to induce the bees to fill the section from edge to edge, the inside of the wood should have a thin coat of molten wax applied with a brush, but remember that bees never make a complete section if the honey-flow be scant. The molten wax painted on will only act if the season be good, and is undoubtedly an inducement to bees to leave fewer holes than would otherwise be the case. The finished sections can then be fitted in the supers, securely wedging them to prevent spaces being left for the bees to fill with propolis, and thus adding to the work at the very busiest part of the season. In fitting supers do not forget to use separators, or the bees will run one section into another.

THE HIVES.—Those who have hives some distance from home naturally feel anxious about the roofs of the hives when the wind is high. To prevent the roofs being blown off, drive a plug securely into the ground on one side of the hive, fix a rope to it, and run over the roof, and about a foot from the ground on the other side of the hive fasten a brick on the loose end, or two bricks may be fixed, one on each end of a rope which should be so hung over the roof that the bricks do not touch the ground.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY—

Nat. Chrys. Soc. Annual meet. at Carr's Restaurant, Strand.

TUESDAY—

Roy. Hort. Soc. Com. meet. Ann. meet. 3 p.m. B.G.A. (Leeds Branch) meet.
Nat. Rose Soc. adjourned annual meet. at Westminster Palace Hotel.

WEDNESDAY—

Sheffield Chrys. Soc. meet. Roy. Soc. of Arts meet. (Lecture at 4.30 by Professor J. A. Fleming, D.Sc., F.R.S., on "The Organisation of Scientific Research.")

THURSDAY—

B.G.A. (Watford Branch) meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 59.4.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, February 3 (10 a.m.): Bar 29.8, Temp 50°. Weather Raining.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY, AND FRIDAY—

Liliums and other Hardy Bulbs, Gladioli, Carnations, etc., at 12, Herbaceous Plants, Shrubs, and Roses, at 1.30, by Protheroe & Morris, at 67 and 68, Cheapside, E.C.

MONDAY AND WEDNESDAY—

Rose Trees, Fruit Trees, Shrubs, Perennials, &c., at Stevens's Rooms, 36, King Street, Covent Garden, London.

TUESDAY AND WEDNESDAY—

Nursery Stock at Braxbourne Nursery, Braxbourne, by Protheroe & Morris, at 12.

TUESDAY—

Palms, Roses, Hardy Bulbs, and Herbaceous Plants at 12, 2,166 cases of Japanese Liliums, at 5, by Protheroe & Morris.

WEDNESDAY

Palms, Azaleas, Bays, &c., at 1.30, by Protheroe & Morris.

THURSDAY—

Nursery Stock at Bickley Hill Nurseries, Bickley, by Protheroe & Morris, at 12.
Roses, by Protheroe & Morris, at 1.

Double Stocks.

All gardeners are aware of the fact that Stocks with double flowers lack stamens, and possess at best but malformed and functionless ovaries. Whence it follows that the double Stocks grown from seed must be derived from single-flowered plants. It is known, moreover, that only certain races of single-flowered Stocks give rise to doubles. These races, which may be called for convenience "double-throwing-single" races, produce both doubles and singles, the former in a small numerical predominance over the latter. Miss Saunders, to whose patient and admirable investigations we owe our knowledge of the genetics of doubleness in Stocks and other plants, has shown that we may expect on the average nine doubles and seven singles in every sixteen plants raised from seed produced by double-throwing-singles. This works out at about 56 per cent. doubles to 44 per cent. singles. But seedsmen and gardeners are by no means satisfied with this comparatively small percentage of doubles, and, indeed, it is often claimed that such and such a race throws a far higher percentage of doubles. Some seed-raisers go further, and claim to be possessed of means of increasing the proportion of doubles. For example, Chaté asserts that by removing the weaker branches of the seed bearers and

by rejecting seed from the upper half of the seed-vessel, the yield of doubles may reach so much as 70 or 80 per cent.

As apparent evidence in favour of the opinion that doubleness may be encouraged by cultivation, we have the undoubted fact that a batch of Stocks may often show a number of doubles much greater than 56 per cent.

Miss Saunders has, therefore, addressed herself to the problem of reconciling the theoretical fact that double-throwing-singles should only yield about 56 per cent. of doubles with the fact of practical experience that growers often succeed in obtaining a much higher proportion. The results of her investigations, published in the current number of the *Journal of Genetics* (Vol. 5, No. 2, Dec. 1915), indicate that the explanation of this apparent contradiction is simple. Having already found reason for believing that the seed destined to produce double-flowered plants is somewhat longer-lasting than that destined to yield single-flowered plants, Miss Saunders proceeded to investigate the relative vigour of development of singles and doubles. She found suitable material for her investigation in a race of Intermediate, hoary, white Stocks grown year by year at Cambridge. This race threw for four years in succession from 80 to 85 per cent. doubles. By the simple expedient of saving a large sample of the seed of this race and ensuring that every plant which grew was allowed to flower, she was able to prove that this race behaves in the theoretically proper way, and gives rise only to about 55 per cent. doubles. The wide difference between the numbers of doubles obtained under garden and under experimental conditions is, therefore, to be ascribed to some form of selection practised in the case in point unconsciously by the gardener.

The nature of this selective process was discovered when seedlings were divided into groups according to their vigour in the young stages. The results of the experiment are striking.

The seedlings were graded before showing sign of flower buds into 14 groups, of which No. 1 contained the most vigorous plants and No. 14 the least vigorous.

Groups 1 to 5 (i.e., the five most vigorous groups) gave the following percentages of doubles: 77, 66, 58, 77, 61. Groups 6 to 9 (the next in vigour) gave in percentages: 50, 54, 47, 51. Groups 10 to 14 (the least vigorous) contained relatively few plants, and gave together a percentage of 32 doubles.

It is, therefore, to be concluded that in the race of intermediate Stocks with which the experiment was made the doubles are the more vigorous or more precocious plants; but whether this will prove to be the case in all similar races has yet to be demonstrated. Gardeners generally will be inclined to be sceptical, for many of them hold the view that in the case of ten weeks' Stocks, the opposite state of affairs obtains, namely, that the less vigorous plants throw on the average a higher percentage of doubles than do the more vigorous

An interesting case which came under our notice some years ago deserves to be put on record. A hybrid race, obtained, if memory serves, by crossing a strain of Brompton with an Intermediate, yielded early-flowering and late-flowering plants: of these, all the early-flowering individuals were double, and all the late-flowering individuals were single. Here precocity and doubleness were closely associated: but just as it may prove in the former case, so this association is by no means general, and it may be that whereas in some races doubleness and vigour (or precocity) go together, so in other races doubleness may be associated with the less vigorous or less precocious plants. It would be interesting to obtain data on a large scale on these points, and we hope that gardeners who are in the habit of growing Stocks of various kinds will, if opportunity offers, take note of the degree of vigour and its connection with the proportion of doubles to singles.

NATIONAL ROSE SOCIETY.—The adjourned Annual General Meeting of the National Rose Society will be held at the Westminster Palace Hotel, Victoria Street, Westminster, on Tuesday, the 8th inst., at 3.30 p.m.

WINDSOR ROSE SHOW.—We are informed by the secretary that the annual exhibition of the Windsor, Eton and District Rose and Horticultural Society will be held on the slopes of Windsor Castle on Saturday, June 24.

CITY OF LONDON ROSE SOCIETY.—The City of London Rose Society, established in 1912 with the object of increasing the love of the Rose among City workers, may fairly claim to have achieved a considerable success in this direction. Last year's exhibition, held, as usual, in the Great Hall of the Cannon Street Hotel, was the finest which the society has held, and the profits, including the amount realised from the sale of the blooms at the close, were placed at the disposal of the Lord Mayor, with the gratifying result that £65 was handed over to the Red Cross Fund. This year the society is marking a step forward by opening its doors to all amateurs, and a large number of new classes for both large and small growers has been added to the schedule. The exhibition on June 27 will be opened by the Lord Mayor, Sir CHARLES WAKEFIELD (who has presented the new City Championship Challenge Cup), and will again be a "Red Cross Show": three special Red Cross Cups, to be won outright, have again been generously given by Mr. and Mrs. M. G. ANDERSON. Another new activity of the society is in connection with municipal Rose gardens—a movement which especially on its educational side, has a useful future. The society is co-operating with various municipalities and nurserymen in planning, planting, and supervising Rose gardens in public parks and recreation grounds, the aim being to establish in each centre an object-lesson in design and culture. The results at Croydon, Chesham, Wimbledon, and the L.C.C. gardens at Forest Hill and Eltham—all now in hand—will be looked forward to with much interest.

NATIONAL CHRYSANTHEMUM SOCIETY.—The Annual General meeting of the members of the National Chrysanthemum Society will take place at Carr's Restaurant, 264, Strand, on Monday, the 7th inst., at 7 p.m., to receive the Executive Committee's annual report and accounts for the year 1915; to elect a president, officers, auditors, and one-third of the committee for the

year ensuing; to consider the following motion, of which notice has been given by Mr. E. F. Hawes:—"That the rules of the Society be altered as follows:—Rule V.—After the words 'One-third of the members of the executive committee shall retire annually, but shall be eligible for re-election,' delete the words 'provided they have made four attendances during each year of office,' and substitute the words, 'provided they have attended 50 per cent. of the meetings during their tenure of office, or in the event of a fraction of the next number below 50 per cent. In the event of any member failing to make the requisite attendances (unless reasonable causes for absence can be assigned) he shall be considered to have vacated his seat in the committee.' Rule XVII.—Delete the words 'No auditor shall hold office longer than two years consecutively.'" To transact such other business as pertains to the

KILLARNEY HOUSE.—Owing to the destruction of Killarney House by fire, Lord KENMARE, the owner, has decided not to maintain the flower gardens which surrounded it. In these circumstances, Mr. ELGAR, the head gardener, will be relinquishing his duties as soon as he has found a suitable opening elsewhere. An illustrated account of the gardens at Killarney House appeared in *Gardeners' Chronicle*, March 30, 1909, p. 180.

THE "DAVIDSON" CUP.—The Davidson Cup, to be awarded at the Chelsea Show of the Royal Horticultural Society, May 23, 24 and 25, is this year offered for the best *Odontoglossum crispum*. No more beautiful or more popular Orchid could be selected for the honour. Two hundred First-class Certificates or Awards of Merit have been secured by varieties of *Odontoglossum crispum*, commencing with the First-Class Certificate to the first shown typical form,

variety, although that form has been the general favourite. The course to be pursued will be to regard the two classes indifferently, and select from either, according to the standard decided on. The blotched varieties may also give trouble in raising the oft-repeated question, What is a *crispum*? some experts holding that many of the imported blotched forms are not true *O. crispum*; and it is well known that certain of the home-raised varieties, including several which have received Awards, are not true *O. crispum*. It is interesting to note that Mr. ERIC DAVIDSON, who is a member of the R.H.S. Orchid Committee, is on active service with the Artists' Rifles.

WAR ITEMS.—From forty-two of the small villages and hamlets of agricultural Belgium particulars have now reached this country of the number of houses, probably all farms of small holders, which have been demolished. Out of



FIG. 32.—MR. REGINALD FARRER'S EXPLORATIONS: *ISOPYRUM GRANDIFLORUM*. (See p. 72.)

annual general meeting. The president, Sir Albert Rollit, LL.D., will occupy the chair.

KEW GARDENS.—In the House of Commons on Wednesday, January 26, Mr. WHITEHOUSE complained of the institution of a charge of a penny for admission to Kew Gardens. Mr. ALEXANDER, in the course of his reply, stated that the charge for admission is estimated to produce £8,000 to £9,000 a year.

"THE GLADIOLUS ANNUAL."—This publication, which is issued by the National Gladiolus Society, consists of the list of members and rules, and statistical matter, including lists of varieties gaining the society's awards, varieties registered by the society in 1915, and a report of the trials conducted at Locksheath, with particulars of the colours and dates of earliest flowering. The list of members is a small one, but it includes growers in nearly all parts of the Continent, the two Americas, Australia, New Zealand and South Africa.

on April 18, 1865. The earlier forms were white, or nearly so, but later importations showed that not only is there great variation in the quality of the white forms from various localities, but that blotched varieties, no two of which were quite alike, occurred in importations so frequently that collectors could form special sections of *O. crispum* alone, the rarest forms being worth several hundreds of pounds. During the past few years the raising of *O. crispum* from seeds of carefully selected varieties has introduced a new feature, the best forms so obtained being improvements on both the white and the blotched varieties, more especially in the form and substance of the flowers. The great variation in the species, and the two distinct sections composing it, offers some difficulties in awarding the prize, if both classes are well represented. In the height of its popularity among specialists the best blotched form would be preferred to the good typical white or blush

10,021 houses in these villages which existed when the Germans entered the country not more than 5,026 are now standing. In the hamlet of Spontin, where formerly there were 130 houses, all but three have been demolished. Out of 117 houses at Barchon 110 now remain; at Villiers-en-Fagne there are now only 45 out of 57, and at Leizele, Ombaye, and Frosnes the proportion of houses remaining is extremely small.

The latest issue of *L'Horticulture Française* gives a fourth list of casualties of French nurserymen and gardeners. The list of killed includes the names of twenty-one, to which are added those of fifteen former members of the Versailles School of Horticulture. Seven names of wounded appear, and among these is that of Lieut. H. NONIN. Prisoners number nine, and three others are reported missing.

M. JEAN DE VILMORIN and M. VINCENT DE VILMORIN are with the French Expeditionary Force at Salonika.

— We learn that one of the sons of M. ROZAIN-BOUCHARLAS, of Lyons, after going through the campaign and retreat in Serbia, has been transferred to the French Army at Salonika.

— Private E. J. MARCH, 6th Batt. R. W. Surreys, has died from wounds received in action in France. Before enlisting, in August, 1914, he was employed in the garden at The Oaks, Walton Heath, Surrey.

— M. F. CAYEUX, of the firm of Messrs. CAYEUX AND LECLERC, seedsmen in Paris, is on service as a Captain in the neighbourhood of Marseilles. M. PHILIPPE RIVOIRE, secretary of the French Chrysanthemum Society, is a Captain attached to the Colonel Commandant of a military dépôt in the south, having previously served in guarding the lines and communications of that district. One of his sons has joined the French Artillery in the Dauphiny.

— We regret to learn that M. RENÉ MOSER, son-in-law of M. ALBERT TRUFFAUT, of Versailles, has recently been wounded a second time.

— M. ALBERT MAUMENÉ, Editor of *La Vie à la Campagne*, was wounded early in the war, whilst the son of M. HENRI MARTINET, Editor of *Le Jardin*, was missing after a fight at Neuville St. Vaast.

OFFICIAL ANALYSIS OF SEEDS.—At the meeting in Mullingar of the Westmeath County Committee of Agriculture and Technical Instruction held on the 23rd ult., a report was read from Mr. A. SCULLY, the Instructor in Agriculture, giving the results of analysis of samples of farm seeds purchased from various traders throughout the country and sent to the Department's testing station. Mr. SCULLY stated that the Department had supplied him with extracts from their list in so far as it related to Westmeath, together with the names and addresses of the traders on whose premises the samples were taken. The report gave particulars of the samples and the results of the tests. In the first sample, out of every 100 seeds only 24 sprouted or germinated under the most favourable conditions. Sample 5 (red clover)—almost one-fourth of its weight consisted of impurities. Out of every 100 seeds tested only 47 sprouted or germinated in the most favourable conditions. Out of 147 samples taken by him last season in the county, the Department found 33 samples to be satisfactory. The chairman said that traders selling seeds ought to be warned that if similar reports were received next season, or at any time in the future, their names would be published; there had been some prosecutions in the west of Ireland. The most effective way of stopping the sale of inferior seeds was to placard the names of those who sold them. The Agricultural Instructor was authorised by the Committee to embody the names of the traders in question in his report.

PUBLICATIONS RECEIVED.—*Royal Botanic Gardens, Kew, Bulletin of Miscellaneous Information*, Appendix I., 1916. *List of Seeds of Hardy Herbaceous Plants and of Trees and Shrubs*. (London: H.M. Stationery Office.) Price 2d. *Plantae Wilsonianae*. Edited by C. S. Sargent. Vol. II., Part 2. (Cambridge, Mass.: the University Press.)—Reprint from *Journal of Agricultural Research*, Department of Agriculture, U.S.A., Vol. V., No. 13 (*Carbohydrate Transformations in Sweet Potatoes*). By H. Hasselbring and L. A. Hawkins. (Washington: Department of Agriculture.)

CELERY.

If Celery is required for use as early in the season as possible, sowings may be made in the middle of January. From these sowings well developed, perfectly blanched specimens may be obtained by the middle of July with but little risk of "bolting," provided the roots are given uniform moisture and the plants suffer no check to growth.

For August use the seeds may be sown in February, and the main crop sowing may take place in the middle of March. A sowing may also be made late in April for very late supplies.

The seed should be sown thinly in boxes or pans of light, finely riddled soil, placed in a temperature of 65 degrees, or on a few inches of similar soil placed on a mild hotbed, in the first case removing the seedlings to slightly cooler quarters after germination. Thick sowing is exceedingly detrimental. Prick out the seedlings 4 inches apart in boxes of rich soil, or on a mild hotbed, preferably the latter, as soon as they are fit. Grow them steadily in moist conditions, not subjecting the plants to overheating, cold draughts, sudden changes in the temperature, or checks of any kind.

The soil for Celery should be prepared by deep cultivation, incorporating a good supply of farm-yard manure. In the case of early crops required for use before the middle of November trenches are unnecessary, a depression deep enough to hold water being sufficient. With Celery, as with many other crops, better results are obtained if the manure is uniformly distributed over the whole area, instead of being concentrated in a few narrow trenches.

Shallow trenches are necessary for winter supplies in order to facilitate the earthing up which is necessary to protect the crop from frost.

For early supplies the plants should be set out in single rows about 2 feet 6 inches apart, allowing the plants a distance of 15 inches apart in the rows. A greater distance is advisable if the soil is very rich. If a few heads are required very early, plants may be potted into 10-inch pots, using rich compost of a tenacious nature. Place these in a deep pit, the atmospheric conditions of which should be as humid as is consistent with moderate ventilation.

A sheltered site is greatly appreciated by the plants of the first outdoor batch, and in such a spot they may be planted at the end of April, protecting them at night by covering them with large pots. From that date planting may take place as the successional batches become ready, taking care to lift the plants with a good ball of soil.

The late batches may be planted in double rows in shallow trenches.

It is scarcely possible to over-water Celery, provided the moisture is uniformly maintained, but to allow the plants to become dry and then have them heavily flooded with water is to court disaster. The result is pithy stems, which decay prematurely, and are prone to disease, whilst they have a great tendency to bolt. Similar results may be brought about by over-feeding. Celery is greatly benefited by regular waterings of diluted liquid manure. Sewage, guano water and liquid farm-yard manure are all suitable for this purpose, but they must be well diluted before use and applied regularly. Blanching should be commenced at least two months before the heads are needed, brown paper cut into five or six-inch strips being suitable for this purpose. After the removal of all side growths and the unnecessary lower leaves, these strips should be fastened round the base of the stems, fairly tightly, and yet allowing room for development. Replace these strips by wider ones as often as necessary until the stems are blanched to a sufficient length. The whole crop may be treated thus as bleaching becomes necessary, earthing up with soil at the advent of frost, and protecting them securely.

The Celery fly is often troublesome, and if unchecked is destructive to the crop. Prevention should be sought by making the foliage as disagreeable as possible to the female to deter her from laying her eggs there. The old-fashioned remedy of dusting the plants with soot at bi-weekly intervals in the early morning or after rain is effectual, or the plants may be sprayed at intervals with a weak paraffin emulsion. *E. R. James, Wroton Abbey Gardens.*

TREES AND SHRUBS.

PROPAGATION BY SOFT CUTTINGS.

THE propagation of hardy ligneous plants by cuttings is usually effected by means of half-ripened or fully-ripened wood, but many subjects can be readily increased by soft, or herbaceous cuttings. These are taken in spring and early summer, and consist of the young side shoots, which vary in length from one inch to six inches, according to the nature of the plant. It is impossible to give exact times when these soft cuttings should be taken, as the spring season is very variable, and there may be a difference of two or three weeks from one year to another in the time when the cuttings are ready. It may, however, be stated as a guide that when the first three or four leaves are fully developed the cuttings are ready, and if carefully handled should root freely, and, in most cases, quickly. Care must be taken that the cuttings be not exposed to sun and wind after being taken from the parent plant. If they flag, they are practically useless, being, as a rule, too tender to revive. They should be pulled off with a heel (as far as a heel can be said to be developed in such soft growths), and any loose bark trimmed off the base, as well as the lower leaves. They should be inserted in pots of sandy soil, or in pure sand, the latter for preference, and be put in a close case with a bottom heat of 60° to 65°. Practically all the hardy flowering shrubs, such as *Dentzas*, *Forsythias*, *Hydrangeas*, *Spiraeas*, and *Weigelas* can be quickly increased by this method. A good form of *Forsythia spectabilis* was noted at Kew Gardens last year, and cuttings taken while the plant was in flower. They were inserted in pure sand, and put into a close propagating case under bell glasses. In a fortnight they were well rooted, and were potted, and put back into the case for a few days. A month later they had been hardened off and planted out, and at the present time are sturdy plants from eighteen inches to two feet in height. *Cornus Spaethii*, treated in the same manner, took about a month to root, while *Magnolia stellata* took about three months. The latter was tried as an experiment, and only about fifty per cent. of the cuttings rooted; but of the other plants the average was about ninety per cent. Various *Lilacs* rooted readily in six or eight weeks. *Eucommia ulmoides* and *Davidia involucreata* soon callused, but have neither formed roots nor died.

Cuttings of Climbing Roses should be taken when the flowers in the trusses are about half opened, the lower portions of the flowering shoots being used as cuttings. The Teas, Hybrid Teas, and Hybrid Perpetuals can also be increased in the same way, the great point being to take the cuttings while they are soft, as if they become at all hard they are more difficult to root. If taken too soon, on the other hand,—and this applies to all soft cuttings—they damp off within a week. As, however, this allows plenty of time for a fresh batch to be put in, it is better to be too early than too late.

Dwarf-growing *Rhododendrons*, such as *R. ferrugineum*, *R. hirsutum*, *R. fastigiatum*, and *Azaleas*, of the indica type, can be increased by soft cuttings, but only if the plants are taken indoors in early spring to start them into growth. The young shoots root readily if taken as soon as they are large enough to handle, and if kept growing during the summer will make strong little plants by the following autumn, when they should be hardened off, and rested for the winter in a cold frame. Many other plants, especially amongst the *Ericaceae*, are readily propagated by soft cuttings if the plants are started into growth indoors, while cuttings identical in every respect taken from outdoor plants invariably fail to root.

Propagation by means of soft cuttings is particularly useful in the case of new or rare plants, of which the stock is limited, as practically all the growth can be utilised. *J. C.*

POUR NOS AMIS FRANÇAIS ET BELGES.

CHRONIQUE SPÉCIALE (LXV).

L'OBSTZENTRALE EN BELGIQUE.

D'APRÈS des renseignements de source allemande nous sommes en mesure de donner quelques chiffres en ce qui concerne les fruits et légumes que l'Obstzentrale a exportés de Belgique en Allemagne. Jusqu'au 30 Décembre, 1915, donc pour la première période de quatre mois, les envois s'élevaient à 2,380 wagons, soit une moyenne de 20 par jour, de Pommes, Poires, Noix, Raisins, Tomates, Pommes de terre, Oignons et autres légumes. Les destinataires étaient essentiellement des administrations communales, au nombre de plus de quatre-vingts et accessoirement des groupements de commerçants, une douzaine environ, qui peuvent acheter quand il a été satisfait aux besoins des services publics.

Nous avons commenté l'appel que l'Obstzentrale adressait à la population allemande pour l'amener à introduire la Chicorée-Witloof dans ses "rations." En trois semaines, 300,000 kilos ont été commandés. A la Noël, 65 wagons, comportant un total de 200,000 kilos, avaient été fournis au prix de 23 mark les cent kilos.

Voici comment opère l'Obstzentrale. A sa tête se trouvent un juriste et un négociant. Son personnel renferme des spécialistes en matière de fruits et légumes et des marchands. Tous les quinze jours, les cours des produits dont le commerce est réservé à l'organisme sont fixés en présence d'un délégué des producteurs de fruits de la région rhénane. Ainsi, au début de Décembre, les Poires devaient être fournies entre les prix de 8 fr. 50 et 15 fr. les 100 kilos, suivant les variétés. L'Obstzentrale les revendait 11 fr. 25 à 18 fr. 25. Les prix s'entendaient emballage en sacs, sinon ils étaient encore réduits de 1 fr. 50.

Le producteur doit vendre sa récolte au négociant désigné. S'il est impossible à celui-ci de prendre livraison de la marchandise lui-même il peut déléguer un agent chargé de la récolte, du transport local et du chargement sur wagon, ce qui rapporte en moyenne 2 fr. les 100 kilos. Dans les régions fruitières, l'Obstzentrale a elle-même désigné des "hommes de confiance" qui font la réception et s'occupent de l'expédition. Il leur est remis de ce chef 1 fr. les 1,000 kilos. Ils préviennent télégraphiquement l'Obstzentrale qui donne à son agence d'expédition d'Herbstthal, le bureau frontière vers lequel convergent tous les envois, des instructions quant à la destination ultérieure des produits.

Des précautions intéressantes sont prises pour éviter les dégâts par la gelée lors du transport en wagon ordinaire. A partir du 1 Novembre les parois sont recouvertes de papier et d'une couche de paille de 20 à 25 cm. d'épaisseur. Les tas sont également recouverts d'une couche analogue. Pour cet emballage on porte en compte 45 fr. par wagon.

La province de Liège seule a fourni, en Septembre et Octobre, 538 wagons de fruits, payés 302,130 marks 78, ou 377,663 fr., le mark ayant cours obligatoire de 1 fr. 25.

NOUVELLES DIVERSES.

LES FLEURS ITALIENNES.—On annonce que l'Autriche-Hongrie a interdit l'importation de fleurs coupées et de la verdure originaires de pays ennemis. Cette décision est le résultat de la campagne à laquelle nous avons fait allusion, contre les fleuristes viennois qui continuaient à s'approvisionner en Italie, via la Suisse et l'Allemagne.

Une revue horticole allemande publie une lettre dont l'auteur déplore la place importante

que les fleurs des Italiens, "ces traîtres," "ces félons," continuaient à occuper à Vienne. Un fournisseur de la cour (K. u. K. Hoflieferant) était publiquement des Ulrich Brunner de la Péninsule. Sous les yeux du correspondant, il expédiait un bouquet composé uniquement de fleurs italiennes. Fleurs italiennes encore dans les couronnes recouvrant le cercueil d'un soldat qui, est-il remarqué amèrement, avait peut-être reçu sa blessure mortelle au front italien!

LES LÉGUMES EN ALLEMAGNE. Les prix maxima auxquels les légumes peuvent être vendus à la clientèle allemande sont les suivants. Vente du producteur au marchand :—

	Les 50 kilos.
Chou cabus blanc	2 mark 50
Chou cabus rouge	4 .. 50
Chou de Milan	4 .. 50
Chou frisé	3 ..
Chou navet	2 .. 50
Chou rave	5 ..
Oignons	6 ..
Choucroute	12 ..

Quant aux débitants, ils ne pourront dépasser :—

	La livre.
Chou cabus blanc	5 pfenning
Chou cabus rouge	7 ..
Chou de Milan	6 ..
Chou frisé	6 ..
Chou navet	5 ..
Chou rave	8 ..
Oignons	15 ..
Choucroute	16 ..

Les importateurs allemands ont régulièrement payé des prix plus élevés en Hollande pour des wagons entiers de Choux et Oignons. On se demande dès lors ce que signifient ces cours officiels! Il paraît que, dès leur entrée en vigueur, certains légumes ont complètement disparu des marchés allemands.

LES ANANAS. Parmi les fruits tropicaux qui sont particulièrement appréciés dans les pays tempérés, des Ananas ont pris une place importante. L'abondance des envois les font obtenir à des cours raisonnables qui font sourire aux prix fabuleux d'antan, lorsque nos jardiniers avaient à mettre à l'épreuve toute leur habileté professionnelle et la caisse du propriétaire—pour parvenir à cultiver quelques fruits. On peut dire que la fameuse culture de l'Ananas, traitée dans tous les manuels de forçage, est rentrée maintenant dans le domaine de l'histoire de l'horticulture.

Dans la plupart des pays tropicaux, l'ananas constitue une plante économique très importante. L'Europe reçoit cependant surtout ses envois des Iles Açores. Les envois de l'Afrique du Sud sont beaucoup moins considérables et les fruits de dimensions réduites.

Comme pour les autres fruits exotiques, l'Angleterre et Hambourg constituent les marchés les plus favorables. Depuis la guerre, le blocus a rendu le port allemand inaccessible et les envois qui d'ordinaire prenaient cette direction ont été vendus en Grande Bretagne où ils ont été les bienvenus. On signalait récemment un arrivage de 120,000 Ananas au port de Bristol. La semaine de Noël les cours étaient particulièrement bas.

L'Amérique reçoit son approvisionnement—important comme pour toutes les "luxuries" des Tropiques—de contrées plus rapprochées que les Iles Açores. Aux Iles Hawaï, la culture a pris récemment une grande extension. Les dix-neuf vingtièmes de l'exportation de fruits, soit environ vingt-cinq millions de francs, sont représentés

par des Ananas. Le trafic insignifiant il y a quinze ans, atteignait en 1913, 1,600,000 colis.

IMPORTATIONS EN 1915. Les premiers chiffres sont disponibles en ce qui concerne les achats de fruits faits par la Grande Bretagne en 1915. Il en résulte que pour beaucoup d'espèces une augmentation s'est produite. A la fin de l'année cependant, l'élevation des frets, s'est fait sentir et a amené une certaine diminution dans les envois. Les importations de Pommes, Bananes, Citrons, Raisins, Oranges dépassent celles de 1913, et si l'on excepte les Bananes et les Raisins, aussi celles de 1914. Une réduction s'est manifestée pour les Cerises, Groseilles, Pêches, Prunes, Fraises, ces fruits provenant surtout de France et de Hollande. Quant aux Tomates, la diminution est d'environ 10 pour cent, mais les envois atteignent encore 70 millions de kilos.

COMITE AGRICOLE ET HORTICOLE BELGE.—Ce comité dont nous avons annoncé la création, a pris possession de son bureau, 23, Grosvenor Gardens, Victoria, Londres, S.W. En vue de l'accomplissement de sa mission, il serait heureux d'entrer en rapport avec les personnes qui possèdent des renseignements précis sur les devastations commises dans les localités agricoles belges. Un appel pressant est fait pour l'envoi de photographies illustrant les destructions de communes rurales, de fermes, d'exploitations horticoles, etc. S'adresser au Secrétaire, à l'adresse sus-indiquée.

CHEZ LES VITICULTEURS BELGES.—Nous avons signalé dans un de nos derniers numéros le drame de braconnage qui s'est déroulé à Hoeylaert et à la suite duquel les habitants de la région viticole ont été soumis à des mesures très rigoureuses de la part des Allemands. Nous apprenons aujourd'hui que les coupables, parmi lesquels trois frères, ont été arrêtés et seront probablement fusillés. Certains journaux ont accueilli le bruit d'un autre drame de braconnage qui se serait également produit à Hoeylaert et qui aurait causé la mort de trois Allemands, dont deux officiers. Le bourgmestre et trois notables auraient été emprisonnés jusqu'au moment où l'autopsie eût démontré que les victimes avaient été frappées de balles allemandes. Nos renseignements particuliers nous permettent de mettre en doute cette histoire; ce serait tout simplement une autre version du drame que nous avons rapporté.

KORT OVERZICHT VOOR DE VLAMINGEN.

Er zijn thans cijfers voornamelijk betreffende den uitvoer van fruit en groenten uit België naar Duitschland, sinds de Obstzentrale den kweker verplichtte zijne voortbrengselen tegen den vastgestelden prijs in te leveren.

Van October tot December werden 2,380 treinwagons vruchten en groenten aan de Deutsche gemeentebesturen geleverd. De provincie Luik leverde in September en October, 538 wagons appels en peren. Op drie weken tijd werd uit Duitschland 300,000 kilos Witloof gevraagd.

Het schijnt dat nu verboden is in Oostenrijk Italiaansche bloemen aan te koop.

Ananassen of pijnappels worden meer en meer op de Europeesche markt aangetroffen. Het gemak waarmee die vrucht in warme landen gekweekt wordt, heeft de oude teelt in broeikas- en op kasteelen doen verdwijnen. 'T waren kostelijke vruchten!

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

CYNOGLOSSUM AMABILE: A WARNING.—I was delighted at first with this beautiful Chinese borage-wort, which gives such abundance of sky-blue flowers; but it produces enormous quantities of seed, enclosed in the most adhesive burrs, which, when they stick in a dog's coat, are most difficult to extricate, and drive the animal really wild. But for that this biennial would be a charming thing for naturalising in woodland glades and margins. *Herbert Maxwell, Monmouth.*

EARLY FLOWERS.—In spite of a very unusual spell of frost in November (10 or more degrees) January was uncommonly mild, with the consequence that flowers and growth generally are abnormally early in the S.W. of the Isle of Wight. There are now in flower three species of *Iris*, *unguicularis*, *histrioides* and *reticulata* (type), the first since early in December, *histrioides* January 10, *reticulata* January 20; *Snowdrops* [*Galanthus nivalis*] three or four weeks earlier than usual; the yellow Dutch *Crocus*, as well as *C. Sieberi*, *C. biflorus* and *C. Imperati*; *Anemone blanda*, the Carpathian *Snowflake*, and hybrid *Lent Heliobores* (the late Mr. Archer-Hinds' original strain). Primroses are in bloom in the garden, and an early very pale form of *Primula cashmiriana*. The white Portugal *Heath*, *Coronilla glauca*, and *Buddleia auriculata* have been in flower for months. Even *Salvia fulgens* has a few flowers on it. A *Heliotrope* that has lived in the open for eight years in a pottery tub has young leaves on it. A scented *Pelargonium* has been in the open for several years past, and there are others of the same kind that have up to now withstood the frost and wet. Many more could be added, for one can find a few flowers on most spring-flowering plants. *Western Wight, Jan. 22.*

GLADIOLUS HYBRIDS (see pp. 34, 52, 66).—Apparently Mr. Brotherton has mistaken me for Mr. Hottes. I am, however, in agreement with Mr. Hottes as to the parentages he gives of *Gladiolus* hybrids. With regard to *G. gandavensis*, Victor Lemoine's opinion was apparently based chiefly, if not solely, on the appearance of the hybrid. But he did not use *oppositiflorus*, and most, if not all, of those who have actually raised hybrids of *oppositiflorus* with *G. psittacinus* and its allies and their varieties maintain that *G. oppositiflorus* is clearly evident in the old type. And, in any case, an opinion on such grounds can hardly be set against the experience of all those, from Herbert onwards, who have failed to raise hybrids between *G. cardinalis* and *G. psittacinus*. With regard to the "Blue" *Gladiolus*, Lemoine had *G. papilio* many years ago (he lists *papilio* Major about 18 or 20 years ago), and it is possible that he had it before 1887; even if he did not use it deliberately, it might have been introduced by accidental fertilisation. It has undoubtedly been crossed in since, and, I understand, by Lemoine himself. But certainly if the violets and blues had already appeared before there was any possibility of *papilio* being concerned, it would be very surprising, even more so than their derivation from *papilio*. There is, however, yet another possibility. Blue *Gladioli*—notably Baron Joseph Hùlot—were raised about the same time by others in France besides Lemoine—I think M. Jarry Desloges was one—and it may be that some other species altogether were used by them. There are two Cape species, *G. atropurpureus* and *G. Hamingtonii*, with dark purple, medium-sized flowers, in Baker's list of *Gladiolus* species. *A. J. Bliss.*

RHODODENDRONS AND LIME (see p. 65).—Further results of Mr. Grove's experiment will be watched with interest. Perhaps the surest way of ascertaining whether the Chinese species of *Rhododendron* can be successfully grown in calcareous soil would be to raise them from seed sown in that medium. At the same time as Mr. Grove received his seedlings from the Edinburgh Botanic Garden, Professor Balfour was so kind as

to provide me with a similar series, which is being grown in ordinary garden soil with a little peat and sand. It will be interesting to see which set succeeds best. Having myself raised a considerable number of the Chinese species from seed, the young plants, now seven and eight years old, are flourishing vigorously in soil which is free from lime, showing that that ingredient is not essential to them. At the risk of being deemed a barbarian, I must say that I think it well that hitherto it has not been found possible to grow *Rhododendrons* in the chalk and limestone districts of this country. Monotony and repetition are besetting sins of decorative horticulture. The incalculable profusion of material placed at the disposal of amateurs and gardeners by the enterprise of nurserymen and collectors has put it in the power of everyone to make the very best of his ground, no matter what the staple soil may be. Living, as I do, in a district where rigid measures of repression have to be taken to avoid being smothered by *Rhododendron ponticum*, it is a positive relief to visit a garden where the soil is unfavourable to the growth of the heath tribe. On the other hand, how agreeable it is in a chalk country, like the southern half of Buckinghamshire, to come upon outlying patches of the Reading beds (Eocene), where the soil, being perfectly free from lime, is most congenial to *Rhododendrons*. I do not know a better example of the charming contrast which results than may be seen at Dromore, where, after climbing the chalk escarpment from Woburn Green, one comes suddenly upon a broad expanse of heath land, with the woodland full of *Rhododendron* and *Azalea*. The common *Heather* or *Ling* (*Calluna*) often finds a footing on a very shallow film of humus lying upon solid chalk. There are broad stretches of *Heather* on the downs to the south-east of Winchester. But *Heather* is xerophyllous, and stands parching drought, which *Rhododendrons*, though shallow rooting, will not do. Hence the unfortunate result of trying to grow them in peat beds excavated in a chalk soil. *Herbert Maxwell, Monmouth.*

WINTER-FLOWERING BEGONIAS.—There is a slight mistake in the article on winter-flowering *Begonias* (p. 62). After the variety *John Heal*, *Agatha* is said to be the next raised, but in reality it should have been *Adonis*, which was distributed in 1887 two years after *John Heal*. The variety *Agatha* was not sent out till 1903, and the parents were not as stated *B. socotrana* and *B. nitida*, but *B. socotrana* and a garden variety *Moonlight*. This last was raised some fifty years or so ago by the late Colonel Trevor Clarke, of Daventry, the raiser also of the well-known *B. Weltoniensis*. The variety *Moonlight* was obtained by crossing the tuberous-rooted *B. Pearcei* with the South African *B. Dregei* (one of the parents of *B. Gloire de Lorraine*). The resemblance between this last named and *B. Agatha* is thus accounted for. A form known as *Agatha compacta* was also distributed about the same time as *Agatha* itself. They are in general appearance much alike, except that *compacta* is, as implied by its name, of more compact growth; hence the shoots require little, if any, tying. The parentage of *Agatha compacta* is *B. socotrana* and *B. natalensis*, this last being a white-flowered South African species a good deal resembling *B. Dregei*. *W. T.*

—I read with much interest the article on p. 62 on winter-flowering *Begonias*. You have, however, omitted to mention the name of the discoverer of the *B. socotrana*—viz. Professor Bayley Balfour, of Edinburgh. Without his valuable introduction this beautiful section of *Begonias*, so useful at this time of the year, would not have been possible. *Harry J. Veitch, East Barnham Park, Slough, Bucks.*

*• NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of ½d. every two ounces.

SOCIETIES.

ROYAL HORTICULTURAL.
Scientific Committee.

JANUARY 25.—Present: Mr. E. A. Bowles, M.A. (in the chair), Sir Everard im Thurn, Messrs. Elwes, Hales, Worsley, Fraser, Horne, Canon Fowler and F. J. C. Chittenden (hon. sec.).

Apple Fruit Spot.—Dr. Horne showed cultures on Apple Agar of various fungi, which he had isolated from minute brown spots on Apple fruits. One of them had fruited, proving to be a species of *Stemphylium*, producing conidia, sclerotia and pycnidia similar to those found on the Apple. The fungi associated with the spot appeared to vary from year to year.

Gall on Rhododendron.—Mr. Fraser showed a further specimen of the fungus gall on the Indian *Azalea*, which has been before the Committee on several occasions, due to the fungus *Exobasidium japonicum*, and which has appeared with increasing frequency since its introduction about 1906. Picking off the galls and burning them is sufficient to keep it in check.

Germination of Vallota purpurea.—Mr. H. J. Elwes drew attention to the curious germination of the seeds of *Vallota purpurea*. The seeds, which were sown on the surface and fully exposed to the light, sent out the usual germination process from the apex of which roots were developed. All the reserve food passed from the seed to the apex of the process, which became green and swelled before any leaves were developed. In all probability food was made during this stage of germination. In several cases in allied plants the formation of chlorophyll is normal in seeds.

Osage Orange Fruiting.—Mr. C. H. Curtis showed a fruit of the Osage Orange, which had ripened in a Suffolk garden. *Maclura aurantiaca* rarely fruits in this country, although the plant is hardy. The present fruit was rather small, and not quite yellow. In the United States *Maclura aurantiaca* is an excellent hedge plant, and the large, yellow fruits, inedible but conspicuous, are freely produced.

The Report of the Council.

We give the following extracts from the report of the Council which will be presented at the one hundred and twelfth annual general meeting of the society, to be held at the Royal Horticultural Hall, at 3 p.m., on Tuesday, February 8, 1916:—

EFFECT OF THE WAR.

It is satisfactory to be able to report that, notwithstanding the War, the work of the Society has been maintained to a remarkably successful degree. The full programme, arranged for both Vincent Square and Wisley, has thus far been carried through. Difficulties have been encountered, but it has been found possible to meet them successfully. The development work at Wisley has also gone forward, and as the year closes the new Laboratory buildings are nearing their completion.

Nevertheless, the Council view the coming twelve months with distinct anxiety, and it is for the Fellows to relieve that anxiety by seeing that there is now no set-back in the important work to which the Society stood committed at the time the War broke out. One way of doing this is obviously by none of us allowing his Fellowship to lapse. The annual subscription is so comparatively small that withholding it can be really necessary to but few; whilst on the other hand, each subscription is helping to maintain the invaluable work of the great Society which the Fellows have been engaged upon, during the last 110 years, for the improvement of fruits, vegetables, flowers, and garden plants both in quantity and quality; in scientifically investigating plant foods, plant enemies, and plant diseases; and benefiting their own gardens and the gardens of Great Britain and her Colonies.

The Council do not intend for one moment to lose sight of the practical side of gardening work, but they know that in order to do this it is absolutely necessary to keep abreast with the upward scientific development which is now entering into, and perfecting, all industries and arts; and because scientific investigation and research work slowly, quietly, and unobtrusively, they fear lest many of the Fellows should fail to grasp their vital importance in every department of modern life; and in this particular the Council cannot but recognise that Foreign Governments have been more far-seeing than our own. Fellows are asked to remember that the Society is not in receipt of any assistance whatever from the Government, financial or otherwise. It holds an entirely independent position, and is free to conduct its work upon lines which are known to be sound, as directed by thoroughly practical, as well as able scientific men. At all costs, and come what may, the Society must be sup-

ported by the Fellows. After the efforts of the past century, and particularly the past quarter of a century, its work must not be allowed to lapse, nor must it be allowed to suffer financial difficulties, with their consequent restrictions, for the sake of what after all will prove to be a passing difficulty. If our enemies are at present endeavouring to prove their scientific pre-eminence in certain regrettable directions, it is even more urgent for this country to prove its pre-eminence in the things which build up, rather than in those things which destroy. And horticulture, from whatever point it is viewed, is constructive. It is a very reasonable anticipation, and one that all events foreshadow, that when the War is ended there will be a better co-ordination of scientific effort in this country, in order that our whole national life may be given a further upward development; and there could be no better time than the present, provided the means are forthcoming, for preparing for that greater effort which lies before us. In every department of the Society's work arrangements are now being made with this end in view, and Fellows have a responsibility in the matter, which it is hoped they will not lightly ignore, when so little from each individual can collectively accomplish so much.

STAFF ENLISTED.

There has been a remarkable response on the part of the staff of the Society to the call for men. No fewer than 32 from the Wisley Gardens (21 staff and 11 students), and of the small staff at Vincent Square four, have enlisted since War was declared. Adding a further 34 past Wisley students and gardeners, a total of 70 is reached, three of whom have already laid down their lives for their country.

ECONOMY.

In response to Government exhortations to economy the positions held by those who have joined the Army have not been filled up, save in those cases in which it would have materially affected efficiency; and all departments are being carefully considered with a view to possible retrenchment—for example, the Council having been informed that most nurserymen and seedsmen value the award of the Society's Medals as much as, if not more than, the Silver Cups usually awarded at the Chelsea, Holland House, and a few other meetings, have resolved to adopt the suggestion, and will accordingly confine the presentation of Cups in 1916 to Amateurs only, unless any specific schedule indicate otherwise. Gold and Silver Medals will be awarded to nurserymen and seedsmen as heretofore. In other directions also, a special effort is being made for promoting economy without loss of efficiency.

BULBS FOR HOSPITALS.

The President, Field Marshal Lord Grenfell, G.C.B., G.C.M.G., made an appeal through the Society in the late autumn for bulbs for the Soldiers' Gardens at the convalescent hospitals and camps near Etaples. There was a generous response, over one ton weight being received. They were despatched free of cost by the British Red Cross Agency, and a very grateful letter of appreciation and thanks has been received from the Chief Officer in Command.

CARE OF FOOD COMMITTEE.

The Care of Food Committee has done good work during the past year in increasing the vegetable and fruit supply of the country. Attention is particularly drawn to a series of nine pamphlets which have been prepared, on (1) Small Fruits for Cottage and Allotment Gardens, (2) The Training of Fruit Trees, (3) Vegetables and How to Grow Them in Small Gardens and Allotments, (4) Flowers for Small Gardens, Window Boxes, and Wall Decoration, (5) Hardy and Half-Hardy Annuals in the Open Air, (6) Bottling Fruits and Vegetables, (7) Vegetable Cookery, (8) Salads and Salad Making. They have been issued at the nominal price of 5d., just sufficient to cover the cost of production, printing, and postage, and have already had a wide sale. The latest to be issued (9) is on Autumn Vegetables Grown from Seed Sown in July and August.

It is impossible to estimate the value to the country of this additional supply of food-stuff, which was initiated by the Society by means of a letter to the *Times* on the very day it became known that an ultimatum had been despatched to Berlin. The possibility of excellent crops from July and August sown vegetables has been established beyond doubt, as was shown by the excellent exhibits of vegetables so produced at our meetings in October, 1914, and again in October, 1915; and as the facts and methods become more widely known, they are certain to become more widely adopted.

WISLEY DEVELOPMENT.

In spite of unavoidable delays caused by the War, the new Laboratories are approaching completion.

Improvements in the gardens include the formation of a garden for British Ferns, to contain the magnificent collection presented to the Society by Mr. W. B. Cranfield, of Enfield Chase; the establishment of an "American Garden"; and the making of a large pond in the seven-acre field, to receive the outflow from the general system of ditches. The best thanks of the Society are due to Mr. Cranfield.

During the whole of the past year Mr. Harold Page, Chemist to the Society, has been on active commissioned service in Flanders. The Trials Officer, Mr. Titchmarsh, has received a commission, and his deputy, Mr. Barker, has recently joined H.M. Forces. Only the loyalty and devotion of the staff have enabled the work of the Gardens to be carried on with success. The number of visitors to the garden (upwards of 15,000) during the year, has been greater than in any previous year—a striking evidence of the fact that Fellows seek, and find therein, solace from the anxieties of the present time, as well as information and instruction for practical use.

The Scientific staff has been engaged during the past year in the following researches:—

Dr. Keeble: The Raising of Self-fertile Races of *Primula obconica*.

Prot. Letroy: The Prevention of White Fly and Scale, Mr. Clittenden: Sterility of Fruit Trees.

Dr. Horne: American Gooseberry Mildew; Black Spot and Mildew on Roses.

Mr. Eric Houghton has been appointed honorary Research Student in Electro-biology, and is making active preparation to begin his investigations as soon as the Laboratory is ready for use.

WISLEY TRIALS.

The following trials have been conducted:—

Winter-flowering Sweet Peas, Bearded Irises, Pyrethrums, Annual Sunflowers, Early and Mid-season Potatoes, Early Peas, Autumn Cabbages, Parsnips, Winter Washes for Fruit Trees, and Spray Nozzles; and the following for the determination of Nomenclature:—Tulips, Pentstemons, Scented Pelargoniums, and Sedums.

NEW COTTAGES.

The block of six new cottages for the Staff at Wisley is now completed and occupied. It will be found at the far southern end of the Gardens, where it forms an attractive group on three sides of a square, facing the road from Bydect.

ENTOMOLOGIST.

In the spring of the year the Society's Entomologist, Professor Maxwell Letroy, M.A., was temporarily released from his duties at Wisley to enable him to undertake, on behalf of the War Office, an investigation into the means of destroying the eggs and larvae of Flies, with the object of preventing outbreaks of disease. His investigations proved to be of much value, and a summary of them will be published in the *Journal*. Later in the year he was urgently requested by the Secretary of State to proceed to India, in order to undertake another entomological investigation for the Government. The Council felt that the acceptance by Professor Letroy of this appointment, entailing absence from England till January, 1917, at least, rendered the holding of his Wisley appointment impossible, and his resignation was accordingly accepted, though with the greatest regret.

IMPERIAL COLLEGE.

With the appointment of Professor Letroy as Entomologist to the Society, relations were established between the Society and the Imperial College of Science. Although Professor Letroy was compelled to relinquish his appointment in November those relations remain, and the prime object which they were designed to fulfil, namely, the establishment of a National Station for Research in Entomology at Wisley, will be pursued.

DIPLOMA EXAMINATION.

The first Final Examination for the National Diploma in Horticulture was held in June, and notwithstanding absences through the War, there were 17 successful recipients on this first occasion. It is thus evidenced that the National Diploma has already won the confidence of the gardening world, which is thoroughly convinced as to its practical, as well as its professional, utility.

DEGREE IN HORTICULTURE.

The establishment of a Degree in the faculty of Science (B. Sc.) in Horticulture by the Senate of the University of London, foreshadowed in the last Annual Report, is now accomplished. Final negotiations are proceeding whereby the Society's Research Station and School of Horticulture at Wisley are to be recognised as a school of the University for the purpose of this Degree. Moreover, the National Diploma has been linked with the Degree by the University requiring that the Diploma Preliminary Examination should have been passed by all candidates for the Degree. The special thanks of the Society are due to Sir Albert Rollit, D.C.L., for introducing the matter and persistently pursuing it over a series of years.

TULIP NOMENCLATURE.

The trial of Tulips for the purpose of determining their synonymy and correct nomenclature has been brought to a close, after two years of very long and careful investigation, both in this country and in Holland. A full, illustrated report has been prepared, which will be issued as a separate publication. This illustrated report will constitute the standard work on Tulips for many years to come. The Council record their grateful thanks to the gentlemen from Holland who have so kindly assisted in this work.

ROME CONVENTION.

The text of the rules for the Importation and Exportation of Plants, introduced at the Pathological Conference at Rome in 1914, has received considerable attention. In connection with this subject, a Return of British Imports and Exports of Plants, Seeds, Bulbs, etc., and a Schedule of Pests affecting the question, are being prepared, at the suggestion of the Society's Parliamentary Committee.

PRITZEL.

The revision of Pritzel's "Iconum botanicarum Index" has not been forgotten, but, under the strained conditions prevalent both in this country and abroad, it is felt that the present is not an opportune time for commencing the work of revision; it has therefore been decided that during the continuance of the War further steps should be deferred, save the collecting of funds from every available source.

"THE PRELIMINARY RECOGNITION."

The use of a card bearing these words has been established for the purpose of recognising "Young plants" and "Seedlings of promise," and having them syste-

matically recorded to the credit of their original raisers, introducers, or owners, before they arrive at a stage when a definite Certificate or Award of Merit could properly be bestowed.

LIST OF FRUITS.

Early in February the Fruit Committee suggested that the Council should give Awards to "Old Varieties of Fruits of sterling merit, which had received no award in the past." The Council replied by asking for a list of the varieties which the Committee had in mind. The Committee then drew up, and submitted in August, a list, which they asked should first be sent round to about 100 prominent growers, all over the kingdom, for their comments upon it. Immediately after the long vacation the Council approved a suggestion that advantage should be taken of the sending out of this list in order to obtain certain further information applicable to particular districts, and the Secretary was directed to draw up a Form of Enquiry for the purpose. Copies of this Form were sent out, together with the Committee's original list, to 107 growers suggested by the Committee, and 84 returns have been received. The returns, tabulated according to districts, will be published at an early date.

CHELSEA SHOW.

The Spring Show will be held at Chelsea in 1916 on May 23, 24, and 25. Owing to the scarcity of labour, and other difficulties, the Council may have to forgo the Great Tent used in 1914 and 1915, and be content for next year with a series of large marquees, but they do not think that the Show should in any way suffer if this change should be unavoidable; it might even serve to break a threatened monotony of repetition.

HOLLAND HOUSE SHOW.

The Summer Show will be held as usual at Holland House, Kensington, on July 4, 5, and 6, but it must be borne in mind that this, like all other meetings of the Society, may possibly be overruled by the exigencies of the times. In case of any alterations being necessary, as long a notice as possible will be given in the Press, but it is impossible to send separate notice to every individual Fellow.

VINCENT SQUARE.

Owing to the Police Regulations controlling the lighting at London, it is necessary for the meetings at Vincent Square to close at 5 p.m. from October to March inclusive.

LAWRENCE MEDAL.

The Lawrence Medal for 1915 has been awarded to Mr. J. Guiney Fowler, of Brighthelmston, Pembrokeshire, for his magnificent exhibit of Orchids at the last Chelsea Show.

DRIED BULB SHOW.

To encourage the planting of British-grown bulbs and to make their excellence quality known, the Council have arranged to hold a Show of Dry British-grown Bulbs, in connection with the meeting on August 1, 1916. The schedule will be found in the Book of Arrangements.

WAR RELIEF FUND.

A fund has been established for helping restore horticulturists and market gardeners in the countries of our Allies whose gardens and horticultural businesses have suffered such wholesale and ruthless destruction. His Majesty the King contributed £100, and up to the close of the year the fund has reached over £6,000, including £1,000 given by the Society.

The Council are particularly indebted to The Lady Northcote, C.L. President, and a committee of influential ladies.

OBITUARY.

It is with great regret that the Council have to record the death of the following Fellows amongst others:—Lord Addington; Viscount Alverstoke; Mr. Atlee Burpee, one of the leading horticulturists of the United States; Sir Arthur Church, F.R.S., K.C.V.O.; Mr. A. D. Darbishire, a great authority on Genetics; the Earl of Jersey, G.C.B., G.C.M.G.; Dr. Hugo Müller, F.R.S., Ph.D., LL.D.; Sir George Nares, K.C.B.; Capt. Savile Reid, R.E., an expert in Lilies; Mr. T. A. H. Rivers; and the Right Hon. Lord Rothschild, for many years a Vice-President of, and great benefactor to, the Society. The Council also deeply regret to record the sudden death, in the last month of the year, of the Hon. John Bosawen, for many years himself a member of the Council, and at all times a most active and willing helper in matters horticultural.

NUMERICAL POSITION.

The following table shows the Society's position with regard to numerical strength during the past year.

LOSS BY DEATH IN 1915		£ s. d.
Life Fellows	8	—
4 Guineas	3	12 12 0
2 "	70	147 0 0
1 "	84	88 4 0
	165	£247 16 0
LOSS BY RESIGNATION, &c.		£ s. d.
4 Guineas	2	8 8 0
2 "	384	806 8 0
1 "	574	602 14 0
Associates	48	25 4 0
Affiliated Societies	34	35 14 0
	1,042	£1,478 8 0
Total Loss	1,207	£1,726 4 0

FELLOWS ELECTED IN 1915.

		£	s.	d.
4	Guineas	3	12	0
2	"	307	644	14 0
1	"	363	381	3 0
	Associates	52	27	6 0
	Affiliated Societies	9	27	6 0
	Commutations	6	9	9 0
	= £172 4- 0d			

	740	£1,075	4	0
Loss		1,726	4	0

Net decrease in income £651 0 0

Deaths and Resignations	1,267
New Fellows, &c.	740

Numerical loss 467

Total on December 31, 1914	14,404
Total on December 31, 1915	13,937

The Council deeply regret having to record that, for the first time since the year 1887, there has been a decrease, on the previous year, in the total number of Fellows. 1915 is the only year, in the long series of twenty-eight years, in which the number of New Fellows elected has not exceeded that of the deaths and resignations combined, or in which the income from Fellows' subscriptions has failed to increase; and sad to say, 1915 shows a falling off in income of £651 which, compared with the last three years' average increase of £1,165, show a total loss from this source alone of £1,814.

COMMITTEES.

The Society owes a constantly recurring debt to the members of the standing and special committees, chairmen, judges, writers of papers for the *Journal*, compilers of extracts, reviewers, lecturers, and the several examiners, who during the past twelve months have done so much to contribute to the Society's usefulness, and to help to maintain its high standing among the practical and scientific institutions of the world.

The Council whilst thanking, as they do most cordially, all the members of the committees for their kind assistance, think it not out of place to remind them that all committees are appointed to advise those who appoint them, whose duty it then is to very carefully consider the advice so kindly tendered, and to give effect to it or not as in their judgment they consider best for the general welfare of the society. The Council are glad to acknowledge that it is very rarely indeed that they are unable to accept the advice tendered by any of their committees; at the same time, as the governing body of the Society, responsible to the Fellows, exceptional cases must in the course of years occasionally occur, and it is the duty of the Council in such rare instances to exercise the power of decision with which the Royal Charter and the Fellows of the Society have endowed them.

The Council greatly regret that they must at length abandon the long cherished hope of Mr. George Bunyard, V.M.H., being again able to resume his place at the head of the Fungi Committee, on which he has served so zealously for a period of thirty-five years. The Council wish to record the thanks of the Society due to Mr. Bunyard, and express the hope that he may enjoy a quiet, restful period in the evening of his days.

The Council desire to cordially acknowledge their obligations to their staff, and also to the Press for their invaluable assistance in reporting upon, and calling attention to, the work of the Society.

By Order of the Council,

W. WILKS,
Secretary.

LINNEAN.

JANUARY 20.—At the meeting held on the 20th ult., Professor E. B. Poulton, F.R.S., President, in the chair. The Treasurer, Mr. Horace W. Monckton, gave a communication on "Some Aspects of the Flora of the Bagshot District," illustrating it by specimens and lantern-slides of the scenery.

This communication deals with the area occupied by the Geological Formation known as "The Main Mass of the Bagshot Sands." About half is in Surrey, the remainder being nearly equally divided between Berkshire and Hampshire. The more important places in the district are Wokingham, Ascot, Yately, Sandhurst, Bagshot, Chobham, Weybridge, Camberley, Windfield, Farnborough, and Aldershot. The greater part was until recent times a tract of pine woods, heaths, and peaty swamps, and its character was mainly due to the sandy nature of the Bagshot Formation and the gravels resting upon it. There is no lime in these strata and, though clay occurs in places, the soil is markedly different from that on the London clay, which comes to the surface around the Bagshot district.

The flora of much of the area resembles that of the Oak Birch Heath Association (*Types of Brit. Vegetation*, edited by A. G. Tansley, Cambridge, 1911, p. 101). Other parts fit in

well with the Heath Association, op. cit. p. 105, though the author thinks that neither *Genista pilosa* nor *Juniperus communis* occur, and some species (such as the Broom, *Molinia*, *Galium saxatile*, *Senecio sylvaticus*, and *Serratula tinctoria*) are perhaps more abundant than is indicated in the list given by Mr. Tansley. There are many tracts which may be described as partially reclaimed heath and on which we find *Polygala serpyllacea*, *Hypericum perforatum*, *Ulex minor*, *Genista tinctoria*, *Epilobium angustifolium*, *Galium verum*, *G. erectum*, *Scabiosa succisa*, *Solidago Virga-aurea*, *Anthemis nobilis*, *Euphrasia brevifolia*, *Lazula multiflora* and *Juncus squarrosus*. Much of the high ground forms plateaux covered with gravel some 10 to 15 feet thick, and on it we find the usual heath-plants: considerable areas of *Vaccinium Myrtillus* with *Scilla non-scripta*, *Nepeta hederacea*, *Tenerium Scordonia*, and in damp places *Rushes* and *Polygonum Hydropiper*, *Illecebrum verticillatum* is perhaps the most interesting plant found in the district. It was recorded by Mr. Druce in *Flora of Berkshire*, p. 416, and the author exhibited a specimen collected by himself last year, also specimens of *Potentilla argentea*, *Galium uliginosum*, *Antirrhinum Orontium*, *Scutellaria minor*, *Rumex Hydrolapathum*, and *Epipactis media* of British botanists. In addition, a series of forms of *Hieracium*, and a new species, to be described by the Rev. E. F. Linton.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

JANUARY 20.—Committee present: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Cypher, P. Foster, A. R. Handley, A. Hamner, A. J. Keeling, D. McLeod, W. Shackleton, S. Swift, H. Thorp, G. Weatherby, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATE

Cattleya Trianae var. *Gracea Townsend*, large flower of good form and colour, from S. GRATRICK, Esq.

AWARDS OF MERIT

Cypripedium Venus var. *Cupid* C. Queen of the Belgians Carter Phoebe var., C. Mrs. F. Godman, C. Alliance (Alcides x *Lecanum Chinkaberranum*), and C. *Euryades Victoria*, all from TOM WORSLEY, Esq.

Cypripedium Illustre var. *Alexis* and C. *Lord Wolmer*, St. Mary's var., both from the Rev. J. CROMBLEHOLME.

C. *Conquest Woodside* var. (*Lecanum* x *Earl of Tankerville*), from F. HOUGHTON, Esq.

AWARD OF APPRECIATION.

Laelio Cattleya Mygdon Ashworth's var., shown by R. ASHWORTH, Esq.

GROUPS.

The following medals were awarded for collections:—

Silver-gilt Medal to R. ASHWORTH, Esq., New Church (gr. Mr. W. Gildem), and Messrs. CYRIL AND SONS, Cheltenham.

Large Silver Medals to the Rev. J. CROMBLEHOLME, Clayton-le-Moors (gr. Mr. E. Marshall), S. GRATRICK, Esq., Whalley Range (gr. Mr. W. W. Field), and TOM WORSLEY, Esq., Haslingden (gr. Mr. T. Wood).

Silver Medal to F. A. HUNDEY, Esq., Bradford.

Bronze Medal to Messrs. A. J. KEELING AND SONS.

ROYAL METEOROLOGICAL.

The annual general meeting of this society was held on Wednesday, the 19th ult., at the Surveyors' Institution, Great George Street, Westminster, Major H. G. Lyons, F.R.S., President, in the chair.

The report of the Council for 1915 was laid before the Fellows, and the Symons Memorial Gold Medal, which is awarded biennially for distinguished work in connection with meteorological science, was presented for transmission to Dr. C. A. Angot, Bureau Central Météorologique de France.

The President (Major H. G. Lyons, F.R.S.) delivered an address on the

"WINTER CLIMATE OF THE EASTERN MEDITERRANEAN."

of which the following is an abstract:—

At the present time, when the area of the Eastern Mediterranean is of special interest, I would direct your attention to its climate, which must exercise great influence on the naval and military operations now in progress. During the last fifteen to twenty years, a large number of meteorological stations have been in operation, and from their published results we have an accurate and detailed knowledge of the meteorological conditions which prevail there at the different seasons of the year. These vary from the true Continental climate of the Balkans, with its low winter temperatures and moderate rainfall at all seasons, to the Mediterranean climate of Southern Greece and the Levant, with its mild winter, hot summer, and a strongly marked rainy season in winter. In Lower Egypt these characteristics also prevail in a more intense form.

The geographical character of the Balkan Peninsula and the surrounding seas, Syria and Palestine, and Lower Egypt, affect to some extent the general climatic conditions, and these are described. The temperature in the Balkan region in winter is frequently very low, descending to 0° F., and often below this at many stations, while frost occurs often at inland Greece and occasionally throughout the Eastern Mediterranean. The most severe weather occurs when anti-cyclonic conditions with clear skies and light winds prevail in the Balkans: the air then falls to a very low temperature, and as a result streams off the highland down into the low-lying Aegean Sea as a strong, cold northerly wind, which often reaches gale force. January is the coldest month, and February differs but little from it, the first marked departure from winter conditions occurring in March. By this month, too, the waters of the Mediterranean begin to grow warmer. During the winter months they have been from 5° to 10° F. warmer than the coasts, where, therefore, the winter climate is much milder than inland, but in March the difference becomes very small, and disappears at many places, as the land is growing rapidly warmer. In winter, rainfall is heaviest on the western shores of Greece and Syria, and markedly less on the eastern coasts. The Balkan rainfall has a maximum in November, and afterwards decreases slightly, but it is not heavy at any time. Rain falls during the passage of depressions from the Mediterranean which pass from west to east, bringing clouds, mild weather, rain, and strong winds. Rainfall decreases southward, and in Lower Egypt the amount is insignificant. The normal air circulation of the Eastern Mediterranean is simple in its general outlines. Northerly winds blow over Greece and the Aegean Sea, becoming north-westerly in the Mediterranean, and westerly on the Syrian coast. In Egypt northerly winds prevail. This arrangement, which follows from the mean distribution of pressure in winter, is, however, greatly modified by the frequent passage of depressions along the Mediterranean from west to east. Many pass over the Balkans to the Black Sea and Southern Russia, causing strong southerly gales in the Aegean Sea, with rain and mild, unsettled weather for two or three days. Others cross Greece and the Aegean, where strong southerly winds blow as they are approaching, which usually veer to the north-west on the following day. Others, again, pass to the south of Greece, sometimes skirting the Egyptian coast, and cause south-westerly gales and stormy weather in the Eastern Mediterranean and Levant, and northerly winds in the Aegean Sea. An analysis of the observations shows that northerly winds, which cause rough sea in the Aegean Sea during the winter months, are more frequent than southerly winds in the proportion of 2.5 to 1; and since many of these northerly winds are due to cold air pouring down from the Balkan highlands, the northerly winds may continue for a week at a time, while southerly gales rarely last for more than two days, unless a second depression is closely following the first.

CHESTER PAXTON.

JANUARY 22.—At the annual meeting held at the Grosvenor Museum on the 22nd ult. (Mr. A. W. Armstrong presiding), the hon. secretary, Mr. G. P. Miln, presented the annual report. The committee had decided that owing to the continuation of the war the annual exhibition for 1915 should be abandoned. The usual course of lectures was also, for the same reason, abandoned, but owing to the courtesy of the Natural Science Society, the members were enabled to attend several meetings bearing upon horticulture. Many members of the society had contributed fruits, vegetables and other products to the local hospitals. It was resolved to invest in War Stock a credit balance of £50, at present on deposit at the bank.

The accounts were adopted, and the officers of the society were re-elected as follows:—President, Mr. T. Gibbons Frost; vice-presidents, Col. Wilford N. Lloyd, M.V.O., Major MacGillcuddy, Mr. E. Peter Jones, and Mr. Edward Porritt; chairman of committee, Mr. A. W. Armstrong; hon. secretary and treasurer, Mr. George P. Miln; consulting naturalist, Prof. R. Newstead, F.R.S. Executive committee: Messrs. N. F. Barnes, J. Clack, W. Dodd, O. Edwards, W. Evans, James Fleet, T. Gilbert, W. H. Little, Stephen May, E. Palin, G. H. Plant, Joseph Ryder, W. Seddon, Edwin Stubbs, R. Wakefield, A. Walker, John Weaver and John Wynne.

DEBATING SOCIETIES.

BILSTON AND DISTRICT FREE GARDENERS'.

The annual meeting of the Bilston, Walsall, and Cannock Chase District of the Order of Free Gardeners was held on Jan. 17 at Walsall, Bro. Henry Bonner, D.M., presiding over an attendance of fifty delegates representing 4,000 members. The District Master gave an address, with an account of the activities of the lodge during the year. There had been a heavy drain on the funeral fund, owing partly to an increased district death rate, and partly to claims on account of members with the forces killed in action. In the management fund a substantial gain was recorded. The invested funds amounted to nearly £2,000. Bro. E. Breckley, "Lost and Found" Lodge, Rushall, was elected District Master for the year, and a gold medal and emblem presented to the retiring Master.

CROYDON AND DISTRICT HORTICULTURAL.

The sixteenth annual meeting of this Society was held on January 12, the Chairman, Mr. A. Alderman, presiding. The financial statement, which was read, showed that the receipts for the year amounted to £57 19s. 1d., and the present bank balance was £20 15s. 11d. The report of the year's work was read, and the account of the various activities carried on by the Society was received with satisfaction. Mr. J. J. Reid was re-elected President, and the Secretary and officials were also re-appointed for the year.

BATH GARDENERS'.

Mr. J. D. Halliburton presided at the first meeting for the present year of the Bath and District Gardeners' Debating Society, held on Monday evening at the Foresters' Hall, Bath Street. A letter was read from Mr. E. F. Stranack, one of the vice-presidents of the Society, expressing regret at his inability to preside, owing to his duties connected with the war. Captain C. T. Foxcroft, who is now quartered at Bournemouth, wrote to the secretary (Mr. H. Sparrow) thanking the Society for re-electing him president. A new ordinary member was elected. Mr. Parrott then read a paper on the Cyclamen. He said that Cyclamen latifolium was a plant well worthy of good cultivation. A well-grown batch of this plant, with their lovely mottled foliage and wealth of different coloured flowers, provided a sight for the eye in the dull days of winter and early spring. The lecturer then proceeded to give details of culture and advice on the eradication of insect pests. The following was the list of prizes awarded:—Class I (gardeners with one or more assistants): Mr. H. W. Tugwell (gr. T. Parrott), 12 pots of Cyclamen, six points and Certificate of Merit. Mr. A. E. Meyer (gr. C. Adlam), collection of Cypripedium, six points and Certificate of Merit. Messrs. Rivington and Johnson (gr. T. Ainsworth), collection of Chrysanthemums, six points. Mrs. Hatch (gr. T. Allen), collection of fruit, six points. Class 2 (single-handed gardeners): Mrs. Erskine (gr. H. Roper), collection of Apples, six points. Mr. F. W. Brown, four pots of Solanums, five points.

ELSTREE HORTICULTURAL.

A well-attended meeting of this Society was held on Thursday, the 27th ult.; Mr. E. Beckett presided. The subject for discussion was "How to Improve the Quantity and Quality of Our Allotments and Gardens by Proper Manures and Cultivation," and was introduced by R. A. Ayres, Esq., of Bushy Lodge, who dealt with the subject in an able manner. The lecturer treated very fully with manures, seed-sowing, and cultivation, advocating deep trenching as an aid to better results. A collection of Apples, embracing about sixty varieties, was exhibited by the Hon. Vicary Gibbs, Aldham House (gr. Mr. E. Beckett).

The quality of the fruit was very good, and the group was well arranged, with Palms in the background.

BRISTOL AND DISTRICT GARDENERS'.—The fortnightly meeting of this Association was held on Thursday, the 27th ult. Mr. H. Woodward presided over a fair attendance. Mr. Strunall read a paper entitled "The Orthodox in Gardening," giving an interesting comparison of the methods adopted by gardeners of the past and present. The first prize offered by Mr. B. Dalton for two pots of flowering plants was won by Mr. Jennings.

WARGRAVE AND DISTRICT GARDENERS'.

The annual general meeting of the Association was held in the Parish Room, Wargrave, on January 12, the president, H. F. Nicholl, Esq., J.P., in the chair. There was a good attendance of members. Mr. T. Batchelor was elected chairman, and Mr. F. Gray vice-chairman. The committee members elected were: Messrs. Crook, Doe, Haskett, Richardson, Rogers, Scott, and Stephens, with Mr. H. Colby, hon. sec. and treasurer. The annual report and balance-sheet were presented and adopted. Messrs. Waterer, Sons and Crisp, Ltd., of the Wargrave Plant Farm, exhibited a group of Iris stylosa. A programme of lectures has been arranged for the spring season.

GARDENING APPOINTMENTS.

Mr. Charles Crane, for many years gardener to the late Mrs. ALEXANDER CRAWFORD, Hinton, Marlstone, Kent, and for the past eight years gardener at Glandford, Pontardawe, Glamorganshire, as tender to Mrs. TALBOT, at Penrice Castle. [Thanks for 1s. for R.G.O.F. box. Eds.]

Mr. W. C. Redfern, for the past 16 months, Foreman at Oakley Hall, Basingstoke, Hampshire, as Gardener to Lieut. Colonel HORSLEY DRAKE, Compton Bassett Gardens, Cadme, Wiltshire. [Thanks for 1s. for R.G.O.F. box. Eds.]

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending February 4.

The Sixth Unseasonably Warm Week in Succession.—This proved another warm week, and the sixth in succession. The last two days were slightly below the average in temperature. But to show how long the recent remarkably warm period lasted, it may be stated that before this we have to go back to December 20, or for six weeks, in order to find another unseasonably cold day. During the same period the nights, with three exceptions, have also been unseasonably warm. On the last night of the week the exposed thermometer registered 8° of frost. The ground is at the present time 4° warmer than is seasonable both at 1 foot and 2 feet deep. Rain fell on one day, but to the depth of only about a tenth of an inch. During the week a quarter of a gallon of rainwater came through the bare soil percolation gauge, and although that on which short grass is growing. The sun shone on an average for 47 minutes a day, which is only half the average daily duration for the time of year. Light airs and calms alone prevailed during the week. Curiously enough, all these light airs came from the south. The mean amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable for that hour by 2 per cent.

An Exceptionally Early Flowering Season.—A selected bush of the Wild Hazel first showed an open fertile flower on January 27, which is twenty-five days earlier than its average date of flowering in the previous twenty-five years, and thirty-two days earlier than last year. A selected patch of yellow Crocuses, growing in my garden, first showed an open flower on January 30, which is twenty-five days earlier than its average date for the previous twenty-nine years, and thirty-four days earlier than last year. The dates of first flowering of both of these plants are the earliest yet recorded here.

JANUARY.

A Record January for Warmth.—This proved the warmest January yet recorded here during the thirty years over which my records at Berkhamsted extend, and according to the Greenwich Observatory records there has been no previous January as warm at all events during the past ninety-four years for which I have their records. Here there was not a single unseasonably cold day, and but four cold nights. On the warmest day the temperature in the thermometer-screen rose to 57°, which is the highest reading I have yet recorded here in January. Rain fell on fourteen days, and to the total depth of 1½ inch, which is ½ of an inch short of the January average. The sun shone on an average for 1½ hour a day, which is 4 minutes a day short of the average daily duration for the month. This was an unusually windy January, but in no hour did the mean velocity for the windiest hour exceed thirty-three miles—direction W.S.W. For 623 hours the direction of the wind was some point between south and west. In no previous January have I yet recorded such a prevalence of wind from these quarters. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 3 per cent.

THE UNDERGROUND WATER SUPPLY.

Since the winter half of the present drainage year began in October the total rainfall has exceeded the average for those four months by ½ inch, which is equivalent to an excess of 18,414 gallons per acre in this district. At the same time last year there was an excess of 124,421 gallons per acre. E. M.

MARKETS.

COVENT GARDEN, February.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report.—Eds.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Azalea, white, per doz. bun.	3 6-4 0	Orchids, Cypripedium	2 6-3 6
Camellias, white, per doz.	1 6-1 9	Odontoglossum crispum	4 0-5 0
Carnations, per doz. blooms, best American varieties	1 3-2 0	Pelargonium, per doz. bunches, double-scarlet (Arums), per doz.	4 0-6 0
— smaller, per doz. bunches	— —	Roses: per dozen blooms	2 6-3 6
— Carola (crimson), extra large	3 0-3 6	— Duchess of Wellington	—
— Malmaison, per dozen blooms	— —	— Lady Hillingdon	—
— pink	10 0-15 0	— Liberty	5 0-8 0
Daffodils, per doz. bunches	—	— Madame A. Chateaux	4 0-6
— Golden Spear	4 6-5 0	— Melody	—
— Henry Irving	3 0-3 6	— Mrs. Russell	—
— Princess	4 0 —	— My Maryland	—
— Victoria	6 0-7 0	— Niphetos	3 0-3 6
Eucharis, per doz.	2 0-2 6	— Prince de Bulgarie	—
Freesia, white, per doz. bun.	2 0-2 6	— Richmond	5 0-6 0
Gardenias, per box of 15 and 18 blooms	6 0-7 0	— Sunburst	—
Hyacinth, Roman, per doz. spikes	0 6-0 8	— White Crawford	—
Lapageria, per doz. blooms	— —	Snowdrop, per doz. bun.	1 6-2 6
Lilac, white, per doz. sprays	4 0-5 0	Spiraea, white, per doz. bun.	—
Lilium longiflorum, per doz. long	3 0-3 6	Stock, double white, per doz. bunches	—
— short	3 0-3 6	Tuberose, per packet, 24 blooms	—
— lancifolium album, long	2 0-2 6	Tulips, single, white, per doz. bunches	5 0-7 0
— short	2 0-2 6	— coloured, per doz. bun.	6 0-10 0
— lancifolium rubrum, per doz. long	1 6-2 0	— double-orange, per doz. bun.	12 0-15 0
— short	1 6 —	— red, per doz. bun.	15 0-18 0
Lily-of-the-Valley, per dozen bunches	24 0 —	— pink, per doz. bun.	12 0-15 0
— extra special	15 0-18 0	Violets, per doz. bunches	1 6-2 0
— special	— —	— double, Marie Louise, per doz. bun.	4 0-6 0
Narcissus, Ornatus, per doz. bunches	3 0-3 6	— Princess of Wales	2 6-4 0
Orchids, per doz.: Cattleya	12 0-15 0	White Heather, per doz. bun.	1 0 —

French and Guernsey Flowers.

	s.d. s.d.		s.d. s.d.
Anemone, double pink, per doz. bun.	1 0-1 6	Ranunculus, red, per doz. bun.	8 0-9 0
— de Caen, mix., per doz. bun.	4 0-5 0	— Barbary, per doz. bun.	3 0-4 0
— mauve, per doz. bun.	3 0-4 0	— carmine, per doz. bun.	3 0-4 0
Marguerites, yellow, per doz. bunches	1 6-2 0	Safrano, per packet, 24's	—
Mimosa (Acacia), per pad	4 0-5 0	Stock, white, per pad	4 6-5 6
Narcissus, Grand Primo, per doz. bun.	2 0-2 6	Violets, Parma, large, per doz. each	2 0-2 6
— paper white, per pad	5 0-6 0	— single, per pad, 48-60's	—
— Soleil d'Or (Guernsey), per doz. bun.	1 6-2 6	— per doz.	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches	7 0-8 0	Fern, French, per doz. bunches	0 6-0 8
Agrostis (Fairy Grass), per doz. bunches	2 0-4 0	— common	4 0-5 0
Asparagus plumosus, long trails, per half dozen	1 6-2 0	Galax leaves, green, per doz. bunches	—
— medium, per doz. bunches	12 0-18 0	Hardy foliage, various, per doz. bun.	4 0-8 0
— Sprenger, per doz. bunches	8 0-12 0	Honesty, per doz. bunches	10 0-12 0
Berberis, per doz. bun.	4 0-5 0	Lichen Moss, per doz. boxes	15 0-18 0
Carnation foliage, per doz. bunches	4 0-5 0	Moss, gross bunches	7 0-8 0
Croton foliage, per doz. bunches	12 0-15 0	Myrtle, doz. bun.	—
Cycas leaves, per doz.	5 0-12 0	— English, small-leaved	6 0 —
Eulalia japonica, per bunch	—	— French, per doz. bunches	1 0-1 3
—	—	Smilax, per bun. of 6 trails	1 0-1 3

REMARKS.—Apart from larger consignments arriving from Guernsey and Scilly there is little new to record. Narcissus ornatus is arriving from home growers in

fairly good condition. At the beginning of last week the prices for these flowers started at 8s. per dozen bunches; but they had fallen to 3s. 6d. before the market closed on Saturday. Of Daffodils, which were in good demand last week, there was a plentiful supply at the beginning of the week, but they were scarcer towards the end, which caused a further advance in prices. The varieties now on sale are Golden Spur, Princeps, Henry Irving, Victoria and Sir Watkin. The new season's blooms of the red Roses Richmond and Liberty are arriving in finer condition. Pink Roses are asked for, but only blooms of the old stock of Mme. Abel Chatenay are obtainable. There are abundant supplies of Tulips, Carnations, Violets, and Snowdrops. White Hyacinths are plentiful and cheap. Violets, Daffodils, and small quantities of Wallflowers are arriving from Cornwall. The first Mauve Tulips came to hand on Monday, and were soon sold at fancy prices.

Fruit Average Wholesale Prices.

Apples—	s.d.s.d.	Dates, per doz.	s.d.s.d.
— Albemarle, per barrel ..	30 0-36 0	boxes ..	4 6-5 0
— Californian, per box ..	7 0-8 6	Grape Fruit, per case ..	14 0-18 0
— English cooking, per bus. ..	4 0-7 0	— Canon Hall, per lb. ..	1 0-2 6
— Nova Scotian, per barrel ..	14 0-25 0	— Muscat, per lb. ..	3 6-10 0
— Oregons, per box ..	9 0-12 0	— Almeria, per bbl. of 60 lbs. ..	22 0-28 0
— Wenatchee, per case ..	9 0-12 0	Lemons, per case ..	13 6-28 6
Apricots, Cape, per box ..	4 0-6 0	Lychees per box ..	14 1-1 6
Bananas, bunch—		Nectarines, Cape, per box ..	3 0-8 0
— Medium ..	7 6-10 0	Nuts, Brazils, new, per cwt. ..	65 0-70 0
— X-medium ..	9 0-12 0	— Coconuts, per 100 ..	21 0-24 0
— Extra ..	10 6-14 0	Oranges, per case ..	12 0-40 0
— Double X ..	12 0-16 0	— Californian Seedless, per case ..	20 0-22 0
— Giant ..	15 0-16 0	Peaches, Cape ..	3 6-8 0
— Red, per ton £20 0 —		Pears, per case ..	20 0-26 0
— Jamaica, per ton ..	14 0 —	— Cape ..	3 0-5 0
Chestnuts—		Plums, Cape ..	3 0-5 0
— Italian, per bag ..	18 0-22 0	Strawberries, forced, per lb. ..	6 0-12 0
— Spanish, per bag ..	9 0-12 0	Walnuts, Naples, per cwt. ..	70 0 —
Cobnuts, per lb. ..	0 5-1 0		
Cranberries, per case ..	12 0 —		

Vegetables: Average Wholesale Prices.

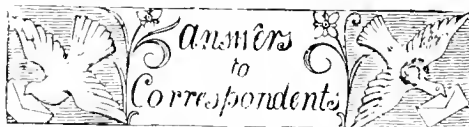
Artichokes, Globe, per doz. ..	s.d.s.d.	Mushrooms, cultivated per lb. ..	s.d.s.d.
— Jerusalem, per cwt. ..	5 0 —	— Buttons ..	0 6-1 3
Asparagus, Paris green ..	3 9-4 3	— Mustard and Cress, per doz. punnets ..	1 0 —
Aubergines, per doz. ..	—	Onions, English, per cwt. ..	12 0-14 0
Beetroot, per bag ..	4 0 —	— Spring, per doz. bun. ..	4 0 —
Beans, Broad, per pad ..	7 0 —	— Valencia, per case ..	13 0-14 0
— Madeira ..	3 0-5 0	Parsnips, per bag ..	2 0 —
Brussels Sprouts, per bus. ..	2 6-3 0	Potatoes ..	—
Cabbage, per tally ..	3 0 —	— Channel Is. lands, per lb. ..	0 6-0 8
Carrots, per doz. ..	2 0-3 0	Radishes, per doz. bun. ..	0 9-1 0
Cauliflowers, per tally ..	5 6-10 0	Rhubarb, forced, per doz. ..	1 3-1 6
Celeriac, per doz. ..	4 0-5 0	— natural, per doz. ..	4 0 —
Celery, per fan ..	0 9-1 6	Savoy, per tally ..	4 0-6 0
Chicory, per lb. ..	0 6-0 8	Seakale, per doz. punnets ..	12 0-15 0
Cucumbers, per doz. ..	17 0-19 0	Shallots, per sieve ..	3 0-3 6
French Beans (Gernsey), per lb. ..	1 9-3 0	Spinach, per bus. ..	3 0 —
Garlic, per lb. ..	0 10-1 0	Tomatoes ..	—
Greens, per bag ..	2 0 —	— Teneriffe, per bundle ..	14 0-18 0
Herbs, per doz. bun. ..	2 0-6 0	Turnips, per cwt. ..	3 0 —
Horseradish, per bundle ..	3 0-4 0	Turnip Tops, per bag ..	2 6 —
Leeks, per doz. ..	2 0-2 6	Watercress, per doz. ..	0 6 —
Lettuce, Cabbage and Cos, per doz. ..	2 0-6 0		

REMARKS.—The supplies of English Apples are getting shorter, and overseas supplies are also limited this week. Cape fruits chiefly consists of Peaches, Apricots, Plums, Pears, Nectarines, and Grapes. The crops of Muscat of Alexandria Grapes are showing signs of exhaustion, but the supplies of Black Grapes appear equal to the demand. Tenderize Tomatoes have been scarcer during the week, and Pears, Beans, Potatoes, Asparagus, Seakale and Mushrooms have not been so plentiful as usual. Some fine heads of Rosefort Cauliflower are reaching the market. Forced and natural Rhubarb the latter from Middlesex growers—is on sale. Asparagus is arriving from France, Devonshire, and Middlesex. The market is well supplied with all seasonable outdoor produce. E. H. R., Current Garden Market, February 2, 1916.

Potatoes.

Bedford—	s.d.s.d.	Lincoln—	s.d.s.d.
— King Edward ..	4 6-5 0	— Eclipse ..	4 6-4 9
— Blackland ..	4 0-4 3	— Evergood ..	4 0-4 6
— Dunbar ..	6 3-6 9	— King Edward ..	4 9-5 6
— Kent ..	—	— Queen ..	4 6-5 3
— Eclipse ..	4 6-5 0		
— King Edward ..	5 0-5 3	Scotch—	
— Queen ..	4 9-5 3	— King Edward ..	4 9-5 3

REMARKS.—Trade is quiet and prices lower. Supplies are equal to demand. F. J. Norrish, Current Garden and St. Pancras, February 3, 1916.



HERBACEOUS BORDER: E. W. Since your border is 170 feet long you will require at least fifty-six plants, or rather groups of plants, along the rows, i.e., at a distance of 3 feet apart. The border should be divided from back to front into four rows of plants, tall ones in the back row (5 feet to 6 feet), shorter species in the two middle rows (2 feet to 4 feet), and plants which grow only 1 to 2 feet in height in the front. If Paeonies are employed, Gladioli should be freely planted among them, as the Paeony has a short and early-flowering season. The best varieties of Gladioli for this purpose are princeps, America, Halley, Baron Hùlot, Ne Plus Ultra and Pink Perfection. In the back row the plants should be in groups of three, in the two middle ones in groups of five, and in the front the groups should consist of seven plants. The plants in the following list are arranged with a view to giving a good colour effect, and the flowering period will last from May until late autumn:—

BACK ROW.	SECOND ROW.	THIRD ROW.	FRONT ROW.
Yellow Paeony-flowered Dahlia	Phlox Rynstrom (4 feet)	Paeony alba plena ..	Betonica grandiflora robusta
Pyrethrum uliginosum ..	Dracopis albidum ..	Eryngium alpinum ..	Catanche bicolor
Aster Climax ..	Lilium croceum ..	Gaillardia or Papaver Jennie	Iris germanica aurea
Helianthus sparsifolius ..	Aconitum bicolor ..	Mawson	
Bocconia microcarpa ..	Anchusa Opal ..	Lobelia Queen Victoria ..	Doronicum plantagineum
Pink Hollyhocks ..	Aster White Spire ..	Pyrethrum James Kelway ..	Polemonium Richardsonii
Artemisia lactiflora ..	Lilium tigrinum splendens ..	Alstroemeria aurea ..	Heuchera brizoides
Delphinium Harry Smeetham	Centauria glastifolia ..	Delphinium Mrs. Bruntou	Phlox Flora Homung (Dwarf)
Helium Riverton Beauty ..	Campanula lactiflora ..	(3 feet)	
Aster puniceus pulcherrima ..	Phlox Goliath (4 feet)	Dictamnus fraxinella albus ..	Rudbeckia Neumannii
Scarlet Paeony-flowered Dahlia	Chrysanthemum maximum	Gemm Mrs. Bradshaw ..	Erigeron Edina
Solidago Golden Wings ..	Mrs. Teersteg ..	Paeony Conte de Paris ..	Aster Amellus Framfieldii
Chrysanthemum uliginosum ..	Lilium excelsum ..	Erigeron Quakeress ..	Helium pinnatifidum
Aster Hon. Edith Gibbs ..	Astilbe Davidii ..	Chelone barbatus Torreyi ..	Iris germanica Celeste
Rudbeckia californica ..	Anchusa Dropmore ..	Erigeron intermedius ..	Trollius Orage Globe
Artemisia lactiflora ..	Campanula latifolia ..	Pyrethrum Aphrodite ..	Sedum spectabile atropurpureum
Scarlet Hollyhocks ..	Lilium chalcedonicum ..	Papaver Mrs. Perry ..	Julia glandulosa
Bocconia cordata ..	Gypsophila paniculata fl. pl.	Delphinium Lamartine (3 feet)	Phlox Tapis Blanc
Rudbeckia Herbstonne ..	Eryngium planum ..	Lobelia Corise Queen ..	Oenothera Pilgrimi
Delphinium Harry Cox ..	Phlox schini ..	Malva moschata alba ..	Salvia virgata nemerosa
Galega Her Majesty ..	Verbascum densiflorum ..	Paeony Duchesse de Nemours	Iberis Snowflake
Helianthus Mrs. Mellish ..	Spiraea venusta ..	Campanula Moerheimi ..	Heuchera Flambeau
White Paeony-flowered Dahlia	Lilium candidum ..	Dictamnus caucasicus ..	Iris germanica Mdm. Chereau
Aconitum Spark's Variety ..	Aechusa opal ..	Coreopsis grandiflora ..	Catanache bicolor
Helium Riverton Beauty ..	Astilbe grandis ..	Pyrethrum Queen Mary ..	Aster Hon. Vicary Gibbs
Aster Endymion (or Raynor)	Lupinus polyphyllus roseus ..	Helium pinnatifidum magnificum	Statice latifolia
Solidago Golden Wings ..	Delphinium Persimmon (3 ft.)	Papaver Harkness Salmon ..	Phlox Olara Benz
Spiraea Arneis ..	Scabiosa caucasicus alba	Aster Dextra ..	Helium cupreum
Crimson Hollyhocks ..	Phlox General Van Heutsz	Chrysanthemum The Speaker	Geranium grandiflorum
Galega Nib ..	Gypsophila paniculata	Paeony Marie Houillon ..	Trollius Excelst r
Rudbeckia californica ..	Sidalea Rosy Gem ..	Gemm Mrs. Bradshaw ..	Aster Amellus King George
Artemisia Novelty ..	Iris ochroleuca ..	Aster White Heather ..	Iris germanica
Delphinium Novelty ..	Anchusa Dropmore ..	Erigeron Quakeress ..	Heuchera sanguinea Grenadier
Artemisia lactiflora ..	Lupinus Snow Queen ..	Pyrethrum Pericles ..	Gillenia trifoliata
Helium Riverton Beauty ..	Scabiosa caucasicus ..	Iris sibirica maxima ..	Delphinium Belladonna semi-plena
Scarlet Paeony-flowered Dahlia	Aster cordifolius albidus ..	Chrysanthemum Mrs. Lothian	Phlox Loki
Chrysanthemum uliginosum ..	Spiraea venusta ..	Bell	
Galega Hartlandii ..	Phlox Josephine Gerbeaux	Delphinium Mrs. Bruntou ..	Anemone japonica alba
Delphinium Triumph ..	Astilbe Princess Juliana	Achillea Perry's White ..	Geranium sanguineum
Aconitum pyramidalis ..	Thalictrum aquilegifolium	Paeony Philomele ..	Aster Amellus Beauty of Ronsdorf
Helium autumnale rubrum	Cimicifuga simplex ..	Hesperis matronalis alba pl.	Euphorbia pilosa major
Aconitum Spark's var ..	Anchusa Opal ..	Papaver Beauty of Livermere	Iris germanica Graculus
Helianthus sparsifolius ..	Lupinus arboreus ..	Lupinus Moerheimi ..	Statice latifolia
Aster cordifolius Ideal ..	Eryngium Oliverianum ..	Monarda Cambridge Scarlet ..	Oenothera Pilgrimi
Spiraea gigantea rosea ..	Lycmis chalcidonica ..	Gaillardia Lady Rolleston ..	Potentilla Gibson's Scarlet
Yellow Paeony-flowered Dahlia	Lupinus polyphyllus albus ..	Phlox Mrs. Jenkins (4 feet)	Phlox Tapis Blanc
Galega carnea plena ..	Phlox Mrs. Jenkins (4 feet)	Centauria montana ..	Campanula glomerata superba
Artemisia lactiflora ..	Lilium tigrinum splendens ..	Paeony Mdm. Charles Leveque	Rudbeckia grandiflora
Delphinium ..	Gypsophila paniculata fl. pl.	Chrysanthemum semi-plena ..	Ranunculus acutifolius fl. pl.
Solidago Golden Wings ..		Aster Amellus Distinction ..	Iris germanica Mrs. Neubronner
Bocconia microcarpa ..		Coreopsis grandiflora ..	Lavendula alba
Pink Hollyhocks ..		Pyrethrum Lord Rosebery ..	Helium Bolanderi
Verbascum Harkness' Hybrid		Iris pallida dalmatica ..	Potentilla Toison d'Or
Chrysanthemum uliginosum ..		Aster Clio ..	Phlox Jules Sandeau
Aster Climax ..		Gaillardia Rowland's Queen	Anemone Lady Adilam
Rudbeckia Herbstonne ..		Delphinium Mrs. Thompson	Geranium grandiflorum
Red-flowered Paeony Dahlia ..		(3 feet)	
		Paeony Rosa Mundi ..	Megasea cordifolia purpurea
		Lobelia Queen Victoria ..	Anemone pulsatilla
		Papaver Jennie Mawson ..	Iris germanica pallida

As an edging you might employ pink Carnation Mrs. Sinkins, Crimson Thrift, Violets, or Nepeta Mussinii (the dark form). As an occasional change in the front row Polyantha Roses such as Mrs. Cuthbush would look very well.

HIBISCUS AND TROPAEOLUM: Shrub, Hibiscus syriacus flowers on the older wood, and the

amount of bloom depends on the thorough ripening of the shoots. We do not advise you to cut back your plants, as this shrub is somewhat impatient of the knife. Tropaeolum Lobbianum requires a position fully exposed to sunshine, and would not succeed on a shady wall. It is a greenhouse plant, and if grown out-of-doors requires protection in winter.

LARCH: Correspondent. The disease is Conifer root-rot, caused by the fungus, Fomes annosus. The stumps and roots of diseased trees should be grubbed up and burned, or the fungus will spread through the ground to the roots of neighbouring Conifers.

NAMES OF PLANTS: F. P. D. The larger flower is Maxillaria picta; the smaller, Maxillaria punctata.

VINES: E. J. B. Ordinary gas tar is suitable for making the specific. Do not let the mixture come in contact with the buds. It will be better to use the sulphur on the hot-water pipes when the vines are in leaf, or you can use a sulphur vaporiser. Red spider may be kept in check by syringing with clear water. This pest spreads in a dry, warm atmosphere, for which reason it is necessary to promote atmospheric moisture by damping the paths

BACK ROW.	SECOND ROW.	THIRD ROW.	FRONT ROW.
Yellow Paeony-flowered Dahlia	Phlox Rynstrom (4 feet)	Paeony alba plena ..	Betonica grandiflora robusta
Pyrethrum uliginosum ..	Dracopis albidum ..	Eryngium alpinum ..	Catanche bicolor
Aster Climax ..	Lilium croceum ..	Gaillardia or Papaver Jennie	Iris germanica aurea
Helianthus sparsifolius ..	Aconitum bicolor ..	Mawson	
Bocconia microcarpa ..	Anchusa Opal ..	Lobelia Queen Victoria ..	Doronicum plantagineum
Pink Hollyhocks ..	Aster White Spire ..	Pyrethrum James Kelway ..	Polemonium Richardsonii
Artemisia lactiflora ..	Lilium tigrinum splendens ..	Alstroemeria aurea ..	Heuchera brizoides
Delphinium Harry Smeetham	Centauria glastifolia ..	Delphinium Mrs. Bruntou	Phlox Flora Homung (Dwarf)
Helium Riverton Beauty ..	Campanula lactiflora ..	(3 feet)	
Aster puniceus pulcherrima ..	Phlox Goliath (4 feet)	Dictamnus fraxinella albus ..	Rudbeckia Neumannii
Scarlet Paeony-flowered Dahlia	Chrysanthemum maximum	Gemm Mrs. Bradshaw ..	Erigeron Edina
Solidago Golden Wings ..	Mrs. Teersteg ..	Paeony Conte de Paris ..	Aster Amellus Framfieldii
Chrysanthemum uliginosum ..	Lilium excelsum ..	Erigeron Quakeress ..	Helium pinnatifidum
Aster Hon. Edith Gibbs ..	Astilbe Davidii ..	Chelone barbatus Torreyi ..	Iris germanica Celeste
Rudbeckia californica ..	Anchusa Dropmore ..	Erigeron intermedius ..	Trollius Orage Globe
Artemisia lactiflora ..	Campanula latifolia ..	Pyrethrum Aphrodite ..	Sedum spectabile atropurpureum
Scarlet Hollyhocks ..	Lilium chalcedonicum ..	Papaver Mrs. Perry ..	Julia glandulosa
Bocconia cordata ..	Gypsophila paniculata fl. pl.	Delphinium Lamartine (3 feet)	Phlox Tapis Blanc
Rudbeckia Herbstonne ..	Eryngium planum ..	Lobelia Corise Queen ..	Oenothera Pilgrimi
Delphinium Harry Cox ..	Phlox schini ..	Malva moschata alba ..	Salvia virgata nemerosa
Galega Her Majesty ..	Verbascum densiflorum ..	Paeony Duchesse de Nemours	Iberis Snowflake
Helianthus Mrs. Mellish ..	Spiraea venusta ..	Campanula Moerheimi ..	Heuchera Flambeau
White Paeony-flowered Dahlia	Lilium candidum ..	Dictamnus caucasicus ..	Iris germanica Mdm. Chereau
Aconitum Spark's Variety ..	Aechusa opal ..	Coreopsis grandiflora ..	Catanache bicolor
Helium Riverton Beauty ..	Astilbe grandis ..	Pyrethrum Queen Mary ..	Aster Hon. Vicary Gibbs
Aster Endymion (or Raynor)	Lupinus polyphyllus roseus ..	Helium pinnatifidum magnificum	Statice latifolia
Solidago Golden Wings ..	Delphinium Persimmon (3 ft.)	Papaver Harkness Salmon ..	Phlox Olara Benz
Spiraea Arneis ..	Scabiosa caucasicus alba	Aster Dextra ..	Helium cupreum
Crimson Hollyhocks ..	Phlox General Van Heutsz	Chrysanthemum The Speaker	Geranium grandiflorum
Galega Nib ..	Gypsophila paniculata	Paeony Marie Houillon ..	Trollius Excelst r
Rudbeckia californica ..	Sidalea Rosy Gem ..	Gemm Mrs. Bradshaw ..	Aster Amellus King George
Artemisia Novelty ..	Iris ochroleuca ..	Aster White Heather ..	Iris germanica
Delphinium Novelty ..	Anchusa Dropmore ..	Erigeron Quakeress ..	Heuchera sanguinea Grenadier
Delphinium Novelty ..	Lupinus Snow Queen ..	Pyrethrum Pericles ..	Gillenia trifoliata
Helium Riverton Beauty ..	Scabiosa caucasicus ..	Iris sibirica maxima ..	Delphinium Belladonna semi-plena
Aster Endymion (or Raynor)	Aster cordifolius albidus ..	Chrysanthemum Mrs. Lothian	Phlox Loki
Solidago Golden Wings ..	Spiraea venusta ..	Bell	
Spiraea Arneis ..	Phlox Josephine Gerbeaux	Delphinium Mrs. Bruntou ..	Anemone japonica alba
Crimson Hollyhocks ..	Astilbe Princess Juliana	Achillea Perry's White ..	Geranium sanguineum
Galega Nib ..	Thalictrum aquilegifolium	Paeony Philomele ..	Aster Amellus Beauty of Ronsdorf
Rudbeckia californica ..	Cimicifuga simplex ..	Hesperis matronalis alba pl.	Euphorbia pilosa major
Artemisia Novelty ..	Anchusa Opal ..	Papaver Beauty of Livermere	Iris germanica Graculus
Delphinium Novelty ..	Lupinus arboreus ..	Lupinus Moerheimi ..	Statice latifolia
Delphinium Novelty ..	Eryngium Oliverianum ..	Monarda Cambridge Scarlet ..	Oenothera Pilgrimi
Spiraea gigantea rosea ..	Lycmis chalcidonica ..	Gaillardia Lady Rolleston ..	Potentilla Gibson's Scarlet
Yellow Paeony-flowered Dahlia	Lupinus polyphyllus albus ..	Phlox Mrs. Jenkins (4 feet)	Phlox Tapis Blanc
Galega carnea plena ..	Phlox Mrs. Jenkins (4 feet)	Centauria montana ..	Campanula glomerata superba
Artemisia lactiflora ..	Lilium tigrinum splendens ..	Paeony Mdm. Charles Leveque	Rudbeckia grandiflora
Delphinium ..	Gypsophila paniculata fl. pl.	Chrysanthemum semi-plena ..	Ranunculus acutifolius fl. pl.
Solidago Golden Wings ..		Aster Amellus Distinction ..	Iris germanica Mrs. Neubronner
Bocconia microcarpa ..		Coreopsis grandiflora ..	Lavendula alba
Pink Hollyhocks ..		Pyrethrum Lord Rosebery ..	Helium Bolanderi
Verbascum Harkness' Hybrid		Iris pallida dalmatica ..	Potentilla Toison d'Or
Chrysanthemum uliginosum ..		Aster Clio ..	Phlox Jules Sandeau
Aster Climax ..		Gaillardia Rowland's Queen	Anemone Lady Adilam
Rudbeckia Herbstonne ..		Delphinium Mrs. Thompson	Geranium grandiflorum
Red-flowered Paeony Dahlia ..		(3 feet)	
		Paeony Rosa Mundi ..	Megasea cordifolia purpurea
		Lobelia Queen Victoria ..	Anemone pulsatilla
		Papaver Jennie Mawson ..	Iris germanica pallida

and walls on frequent occasions after the vines are started.

Communications Received.—E. M.—S. A.—E. R. J.—W. K. H. S. T.—E. S. R. T.—H. S.—J. G. F.—W. L. C. F. H.—J. F. M.—A. W. G.—H. R. B. A.—B. E. J. B.—C. T.—S. F. H. H.—J. B. R.—H. E. D.—F. J.—N. C. F.—H. C. B.—T. W.—W. I.—M. B.—P. G. W.—E. M. O. H. McK

THE

Gardeners' Chronicle

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THE MARKET FRUIT GARDEN.

THE mildest January on record has passed, and in respect of rainfall it proved a great relief from the extreme wetness of December. Although rain was measured on fourteen days, the total for the month was only 1.49 inch at my station, contrasting strongly with 8.13 inches for December. The month, too, was more sunny than January usually is, many hours of sunshine, including a few whole days of it, having been enjoyed on thirteen days. On the other hand, most of the days that were not at least partly sunny were misty, and kept the soil from drying to a desirable extent. Owing to an abnormally high temperature and the prevailing dampness, grass not yet dug has kept on growing until some of the orchards resemble meadows. These will be tiresome and expensive to dig.

PREMATURE VEGETATION.

Frost is urgently needed to check the premature advance of vegetation. The fruit buds of early Pears have swollen considerably, and those of Monarch Plums are relatively about as forward, Czar buds being only a little behind. Unless frost comes soon, or at any rate cold weather, we may have the earliest varieties of both fruits in blossom by the end of February. But this is not probable, as phenomenally forward vegetation almost always gets a check. I remember seeing some Pears in blossom at the end of February many years ago; but that was the only occasion. Since my annual records began, in 1893, the earliest date of early Pears being in full blossom was March 31 in the phenomenally forward season of 1903, though a few blooms were expanded at the same date in 1913. The earliest Plum blossoming according to my notes is for 1913,

when Black Diamonds alone were in full show on March 21. At that date it was estimated that one-sixth of the bloom on Monarchs and one-eighth on Early Rivers were expanded. Between March 24 and 31 have been blossoming dates for early Plums in several years. Apple buds are more forward than it is desirable to see them, those of Bismarek, Early Julyan and Lord Grosvenor particularly. On the other hand, Gooseberries and Currants are not at all prematurely advanced in bud development in my orchards. It was astonishing to see wild Honeysuckle leaf half out on January 31, and Quince leaf a quarter out on the same date. On that day also Snowdrops and yellow Crocuses were in nearly full flower, beating my record. The buds of Forsythia and Lilac were bursting, and *Denizia scabra* and Elder were quarter out in leaf.

LIME-WASHING EXPERIMENTS.

Owing to the difficulty of getting locally the small quantity of freshly-burnt lime needed, and the necessity of waiting for a dry and still day, my experiments were not carried out until January 24, a perfect day for the purpose. Since then, up to the time of writing, no rain of any consequence has fallen, and the trial, therefore, has had a good start. So far as can be told from rubbing the well-covered branches with a finger, lime alone and lime and cement appear to be adhering most strongly, and about equally, lime and borax being next, and lime and size last. This test, of course, is not worth much, and a considerable rainfall must be awaited before any conclusion can be formed. Possibly 2 lb. of borax may be too much to add to 20 lb. of lime and 10 gallons of water. At any rate, the addition of that quantity of borax bore out what Mr. A. H. Lees said as to mixing borax with hot lime, as it caused the wash to become somewhat viscid, and a little difficult to get through the spraying nozzles. It is intended shortly to try the formula recommended by Mr. Lees on page 66; also acetylene gas refuse alone and with quicklime. If any form of silica can be obtained locally, it seems desirable to try it with lime.

THE MYSTERY OF APHIS INFESTATION.

Further search for aphis eggs on Apple trees has resulted in finding one shoot thickly covered with the eggs, which Mr. F. V. Theobald identifies as those of *A. pomi*, as anticipated. This shoot was the only one on which eggs were found on very carefully examining a row of thirty trees, young enough to allow of the examination of every inch in them. They were badly infested last summer. This shoot is only the fourth found with aphis eggs upon it while pruning about 3,000 trees. My two assistant pruners are young and enjoy keen eyesight, while I always wear glasses when pruning, and carry a lens for close examination of any doubtful case.

A similar failure to find aphis eggs occurred last season, although the worst attack on record followed. How could it

arise? Even if one tree in ten contained eggs, how could whole orchards become infested by wingless mother-queens? On this perplexing question being put to Mr. Theobald, he said that a very small number of mother-queens might lead up to a general infestation, as they are conveyed from one tree to another, or from the ground, by ants. In that case, some means of killing ants must be regarded as highly desirable. My land swarms with these insects, and if I were certain that Vaporite or any equivalent destroyer of insects and wireworms in the soil would kill ants, I should be disposed to use it. That this material will drive ants out of a hotbed has been proved; but no dead ones were found. Then come the questions whether Vaporite would injure the roots of trees or bushes, or destroy the beneficial organisms of the soil. These are points requiring investigation before extensive action of the kind indicated.

FROST AND APHIS.

It is strange if professional entomologists are not certain whether frost kills the aphis or not. Mr. Lees, on page 66, regards it as uncertain, except when frost in the autumn causes leaves infested with the insects to fall to the ground. So far as my evidence on the question goes, it leaves me in no doubt as to the fatal effect of even comparatively slight frost on aphis life. In November, 1912, when several frosts of 2 to 7 degrees occurred, there was an extraordinary number of aphides on young Apple trees in one orchard, and in the latter part of the month dead ones in great number were found, while none were found alive at the end of the month. Again, in April, 1915, there were frosts of 2 to 4 degrees here, and my note after searching for the insects was that only a few were found, and "more dead than alive." The live ones had probably been hatched after the frost. If any frost should occur in the latter part of next April, and there are any mother-queens then on the trees, it will be well worth while to inspect them.

THE BEST DESSERT APPLE IN SEASON.

Now that Cox's Orange Pippin is out of season, by far the best dessert Apple that I have ever tasted is D'Arcy Spice Pippin, which was improperly renamed Baddow Pippin, and is known by the latter designation to many people. By the way, it seems to me that no encouragement, or even tolerance, should be accorded to men who rename an old variety. The Apple mentioned is quite as spicy as Cox's Orange Pippin, but less sugary. It is vastly superior in flavour to Claygate Pearmain, Duke of Devonshire, or Mannington's Pearmain—all three late keepers. D'Arcy Spice Pippin, judging from my own experience, is very slow in coming into full fruiting, and it is doubtful whether it will ever be a great bearer in my soil. An ancient tree with which I was pleasantly acquainted in Essex many years ago was a great and regular fruiter, and trees of the same variety are so, if I am not mistaken, in the village which gave it its name. It would be interesting to learn how the

variety succeeds in different parts of the country, and whether it is grown for market to any considerable extent outside Essex.

PRUNING FOR NEATNESS.

In a garden the pruning of fruit trees merely for neatness, in addition to what is needed to prevent the crowding of shoots and to promote extension where it is required, may be desirable; but the market grower cannot afford it. He has to consider only the formation of a well-furnished and symmetrical tree, with branches stout enough to bear the fruit to be expected, and well spurred where artificial spurring is necessary. Any additional cutting involves an increase of pruning work in the succeeding season, and often the postponement of fruiting in addition. It is easy enough to make a tree look neat, and there is always a temptation to cut shoots

where a tree is making only weak growth severe pruning is advisable, and the extra work caused thereby in the succeeding pruning must be borne. Also growths twisted by the aphids must be cut back to sound buds below the twists. Such exceptions, however, only prove the rule which enjoins moderation in pruning. *A Southern Grower.*

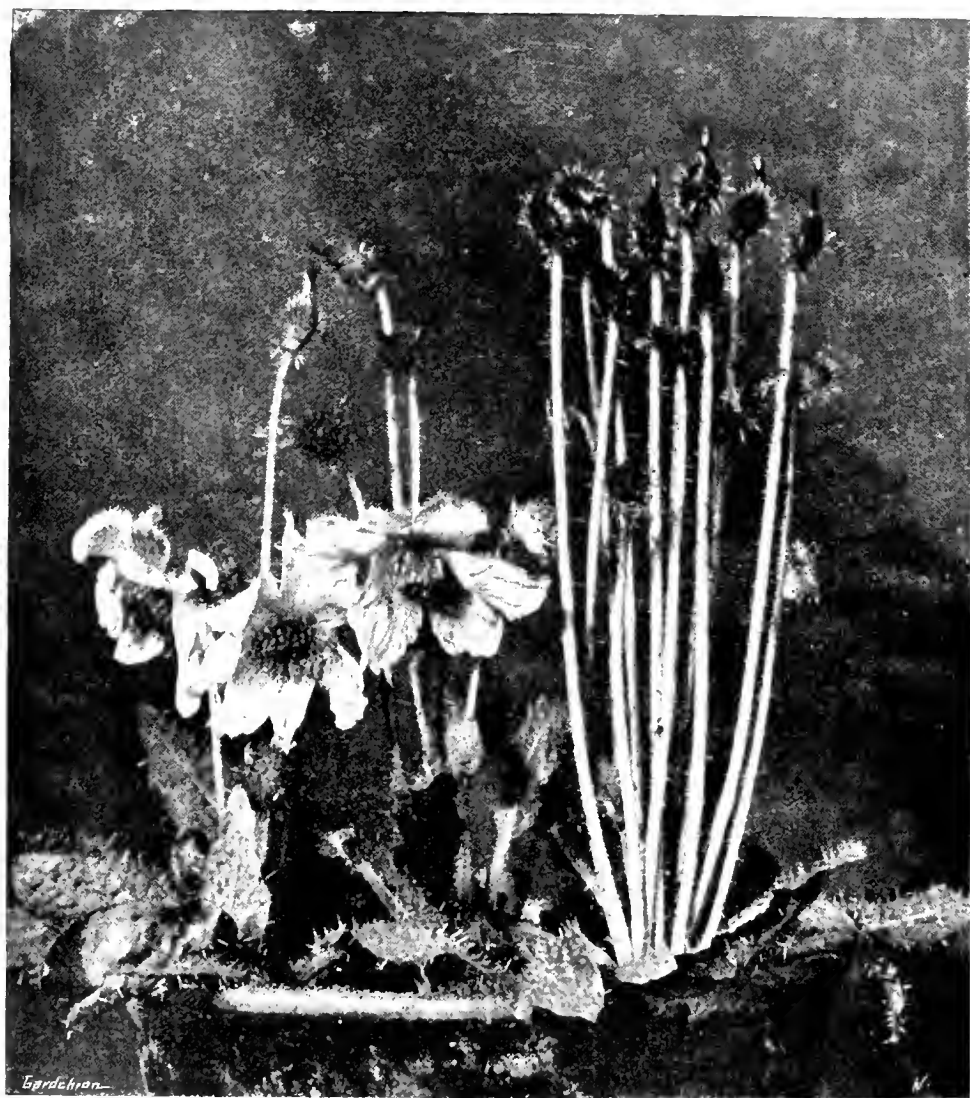
MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.*

XXIX.—THE PASSING SUMMER.

It is a new interest, staying on one spot this year, to watch the passing of the season. Higher and higher up the flanks of the mountain the flowers of the shrubs seem to ascend day by

of a Sussex down, ablow with dwarfish gorse. In fact, this plant is little more than a neat copy of *Ulex nanus*, and does not compare with it in lavish glow of gold, though pretty enough in itself, and worthy of a place on the hot rockwork where a tidy dome of thorns and yellow flowers may be admitted, a foot in height and twice as much across. Indeed, unoriginality is the curse of Caragana, as of *Adenophora*; the one is too close to *Campanula*, the other to *Genista*, even to have won a place of its own in our gardens. The finest yellow Caragana of the Da-Tung is just like a very graceful *Genista*—a shrub of 4-6 feet, with minute foliage and long, pendant, whip-thong sprays beset with brilliant blossoms all their length. And in the woodland opposite the Halls of Heaven is yet a third yellow species, but stiff and gawky, and undeserving further notice. These all are plants of the hot and arid loess region: one Caragana alone is exclusively Alpine and high Alpine, loving the cool, shady aspects of the mountain valleys, and ascending very far up on to the Alps. This is the most distinct of the lot. It is a dense, stiff shrub of 3 feet or so, with stark and stout branches, spreading horizontally if they can, densely set with ferocious thorns in hedge-hog-like multitude, decked with foliage of brilliant green, and bearing all along, in lovely contrast, a show of big pea flowers in soft, clear pink. At its best this ought to prove a real acquisition. Whether it be *C. jubata* or no I cannot yet decide, but it has a great likeness to a young plant of *C. jubata* that I once cherished, until it went the way of so many dear gazelles.

I promised I would speak at further length of *Meconopsis quintuplinervis*, which must now be known as *M. quintuplinervis*, and this I will do, although our shifting plans have not allowed of the better photograph I wanted. Anyhow, the more I see of this plant the higher place do I give it in my affections. Its beauty is of such singular refinement. A certain blatancy is the note in too many *Meconopsids*, reaching its culmination in the really almost vulgar *M. integrifolia*. But *M. quintuplinervis* is as well bred as *M. cambrica*, and far superior in delicacy of line and colour. If only it proves as amenable as I hope, I feel sure that *M. quintuplinervis* will establish a very firm hold on gardens where its more flaunting sisters have their day, and pass; so that, though I disapprove the deliberate coinage of sham popular names for plants that have none, I want *M. quintuplinervis* to become so English as to be henceforth the Harebell Poppy; for, really, to love it under its own name is as impossible as to marry a woman called Georgiana. Last year gave me no idea of its overwhelming effect in multitude. On Chagola it probably reaches or reaches the last limit of its southerly extension, whereas the Da-Tung Alps are evidently the very bull's-eye of its distribution. It is a wonderfully stable plant, but among its many myriads there is a minute percentage of variations. I have seen two beautiful pure Albinos, and an Albinoid almost as lovely, with a violet base: on one stretch of ground occur pinkish and pale forms, while perhaps the most entrancing of all is the rare turquoise-blue one, where the bell is of the most exquisite azure, opalescent, with only the faintest suggestion of the typical Lavender. This blue variation leads me on to the Blue Poppy, *Meconopsis Pratii*, for to this species of last year I now feel quite convinced that all the horridulous *Meconopsids* of this region are to be reduced. The Alps behind Chobson Abbey are said to have yielded the original specimen of *M. racemosa*, and for some time I concluded that the general Poppy of these parts was this. But from end to end of the range from Chobson to Wolvesden I have seen only the white or creamy anthered *M. Pratii*; while to illuminate the matter Purdom, who took a flying trip to Koko-nor and the Alps of Gw. ide, has brought back specimens of a horridulous Poppy there exclusively prevailing, which is quite



(Photograph by Reginald Farrer.)

FIG. 33.—MECONOPSIS RACEMOSA PASSING BACK TO *M. HORRIDULA*.

which have even slightly bent or dwindling ends, even when they are in or near the centre. But the point to consider is, not how the tree will look immediately after the pruning, but what appearance it will present in the coming season. It has to be borne in mind that below every shoot that is bigger than an elongated spur, two, three, or four growths are likely to emerge, according to the strength of the shoot. There is seldom much harm done by cutting back outside shoots, but the similar treatment of well-placed growths in or near the middle of the tree means the encouragement of crowding branches. This can be more or less completely rectified by early summer pinching; but very few market growers can find time for that operation. Of course,

day, and the Alpine lawns that were all an ocean of Lavender Poppy are turned in a week or so to a new riot of golden Saxifrage and blue Gentian. Down in the valley, by July, the bushes are already out of bloom, and the last lingering pea-flowers of the Caragana are gone. Of Caraganas in these parts there are four, besides a very pretty little silvery tuft from the Koko-nor, which I have only seen in dried specimens. Down on the hot loess fells there lives a densely prickly small dune, which gives them exactly the appearance

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 31, November 14 and 28, 1914, January 2, February 27, March 20, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 19, November 13, 20 and 27, December 11 and 25, 1915, and January 8, 15, 22 and 29, and February 5, 1916.

obviously the true *M. racemosa*, with darker flowers, conspicuously golden anthers, and a shorter style (fig. 33).^{*} This also, unlike *M. Prattii*, behaves according to its description in often turning escapose, sending up its flowers each apparently on a private stem of its own, thus reverting to what is the main (and perhaps sole) solid species in their group, pure *M. horridula* itself. Of the variations of *M. racemosa* I cannot speak. *M. Prattii* seems less stable here than in the Min S'an. Often you get vinous or lilac forms. I have seen one Albino, pure, but not brilliant, and three very lovely rose-pink spikes on an inaccessible cliff, evidently seeding true, to make the matter worse. On the whole, *M. Prattii* is not usually quite as good here as in the Min S'an, and has a curious difference in habit. For while in the Min S'an it is confined entirely to cliffs and stone-slides, here it is not found in the stone-slides at all, and, though still adhering to the rocks, is happiest and most luxuriant out in the open turf of the Alpine slopes.

On the eastern face of Wolfesden Pass the Poppy provides a spectacle of rare glory in July, for there also grows in finest form a most magnificent dwarf Delphinium, which at present I believe must be *D. Pylzowi* (see fig. 36). This forms a dense mass of 9 inches high and often more across, settled over with a lavish swarm of great violet butterflies, each on a very long peduncle of its own, so that there is no stockiness nor crowding. This lovely thing is universal in the upper Alps, but especially delights in open earth-panels largely mixed with stone, and is at its very finest at the outer track-edge, down the upper coils of Wolfesden Pass. Here in July it is such a blaze of purple that you can see the mist of colour up ahead of you from the foot of the long climb, and amid its billowing clouds of violet-purple there rise innumerable azure spikes of *Meconopsis Prattii*, giving the gardener a capital hint for a peculiarly beautiful contrast for the soil-ful moraine or gravel-slope, especially if assisted by a charming little orange form of *Papaver nudicaule* which Purdom saw in the Alps of Gweide, and by the Lemon-scented Edelweiss, of which I hope to speak at fuller leisure. The Iceland Poppy is recorded, too, from these mountains, but I have not succeeded in coming across it. Work as one will, the range is very vast and complicated, and though the granitic flora is of a most rigid monotony throughout, there is always the spiteful chance that just the one stone-slope you don't visit (because it is so exactly like all the others to right and left) will be the home of some fastidious odd and end that does not happen to be as universal as everything else. *Reginald Farrer.*

ORCHID NOTES AND CLEANINGS.

LAELIO-CATTLEYA DOMELE.

LAELIO-CATTLEYA Domele, which is flowering for the first time in the gardens of Mrs. Berghelm, Belsize Court, Hampstead (gr. Mr. H. A. Page), is a showy and useful hybrid raised some time ago by Messrs. Flory and Black, Slough.

The plant bears a spike of six flowers, each about six inches across, the sepals and petals being rose-purple, the petals being the darker in tint. The lip, which is formed like *Cattleya Percivaliana*, is deep claret colour with a ruby-red shade and thin dark lines extending from the base to the centre, which has a pale yellow ground. Although the petals are too narrow to render the variety florally perfect according to the present standard, it is a desirable winter flower.

The parents are *L.-C. Dominicana* and *L.-C. elegans Turneri*.

^{*} Compare, with the photograph of *M. racemosa* in seed (see fig. 34), these drawings of typical pods from *M. Prattii* (with one of most aberrant form).

PLANT NOTE.

VINCA ACUTIFLORA BERT.

It is surprising that this elegant Periwinkle is so rarely seen in English gardens, for it is an excellent plant for the shrubbery and certain other places where little else will grow. A photograph, taken by Prof. G. H. Bryan, F.R.S., near Mentone at Easter, 1913, not only shows its profusion of blossom but gives an idea of the tangled mass of vegetation with which it often prefers to grow, in hedges and on the borders of streams and small ravines. Although *V. major* and *V. minor* are also found on the French and Italian Riviera, the Periwinkle par excellence of the Côte d'Azur is *V. acutiflora* Bert. (*V. media* Link et Hoffm.). The leaves are ovate-lanceolate, rounded but not cordate at the base, very glabrous; the linear and glabrous calyx-segments are much shorter than the corolla-tube; the corolla lobes are obliquely acuminate, and the flowers are large, very pale blue, almost white, or sometimes a sort of porcelain-blue. They are to be seen from December to May, but in the greatest profusion in April and May. This Mediterranean plant grows in Italy, round the southern coast of France to Spain and Portugal, in Corsica, Sardinia, and the Balearic Isles, and in North Africa. *H. S. Thompson.*

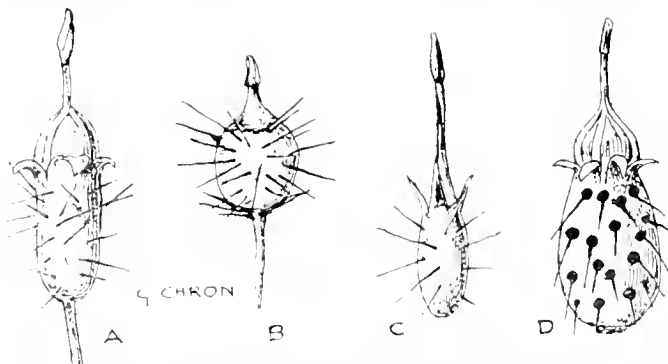


FIG. 34.—CAPSULES OF *MECONOPSIS PRATTII*.

Exclusively prevailing in the Helvetic Alps (from above Chabson Abbey to Salsbrodsum). A, B, C, all having creamy-white anthers, and thus belonging to *M. Prattii*, not *M. racemosa*. Of D the flower is unknown; the very large pod containing very large seeds, arouses strange conjectures. It is set with black callous warts, from which springs each retrorse spine. (—species altera.)

VEGETABLES.

BEEF NEW INTERMEDIATE.

This fine variety was introduced to cultivation some two or three years since, and each succeeding season I have been more pleased with it. It is a great acquisition for early cropping in frames, as it can be grown in the same condition as the Egyptian or Globe Beets, and just as easily, with this advantage, that it produces quite double the material on the same space. The quality of the roots is everything that could be desired, and the variety proved equally good with us sown late during last summer.

VEGETABLE MARROWS.

ALL who desire a change of vegetables early in the season cannot do better than sow a few seeds of Moore's Cream Marrow now. The plants may be grown in pots or fairly deep boxes and trained up bare spaces in an intermediate house, or they may be planted out in frames on a mild hotbed. With proper treatment the plants will fruit freely during April and May, and the plants in frames will continue to crop well all through the summer: the frames and lights should be removed when it is safe to do so. Although there are several other varieties suitable for growing in this manner I have found none to be more reliable than Moore's Cream. *E. Beckett.*

NEW OR NOTEWORTHY PLANTS.

OTHONNA GRACILIPES.

THE South African Compositae furnish many plants with striking morphological features, an example of which is shown in the accompanying sketch of a new species of *Othonna*, collected by Prof. Pearson, in the Albert Division of the Kamo. The petioles of the radical leaves are remarkably slender and thread-like, considering the size and fleshy character of the leaf-blade. In addition to the fleshy rootstock, these leaves no doubt act as reservoirs for the storage of food material, for at the time of flowering they have usually become limp and tinged with brown, showing that most of their contents has been withdrawn into the stem. *O. gracilipes* (the name refers to the slender petioles) belongs to the old genus *Doria* of Harvey and Sonder's *Flora Capensis*, and is extremely closely allied to two species, *D. perfoliata* and *D. chromochaeta*. The genus *Doria* was, however, reduced by Benthham to *Othonna*, and there is no doubt that they are just ray-less species of the latter genus, as shown by numerous interrelated groups, some of the species, except for the presence or absence of the ray flowers, being very nearly identical. On their complete taxonomic combination, which has never been effected, excellent groups might be

established on habit, a large number of striking species having large tuberous roots with scapigerous stems, others woody or fleshy rootstocks, whilst several are much-branched shrubs, with a normal root system and numerous flower heads. The description of the plant collected by Prof. Pearson and now growing at Kew is as follows:—

Othonna gracilipes, Hutchinson, n. sp.—Plant about 60 cm. high (under cultivation); rhizome short, about 5 cm. long, covered with longitudinally wrinkled bark, constricted here and

^{*} *Othonna acutiflora* B. Hutchinson, sp. nov.; affinis *O. chromochaeta* (DC.), sed pappo albo differt.

Planta circiter 60 cm. alta; rhizoma breve, circiter 5 cm. longum, cortice longitudinaliter verrucoso indutum, plus minusve constrictum, apice pilis pallide brunneis dense locatum; caules pauci, gracillimi, probabiliter procumbentes, teretes, leviter glandulati; internodia 7-9 cm. longa. Folia radicalia petiolata, late ovata vel subobovata, basi abrupte emarginata vel late cordata, ad apicem mucronatum rotundata, 6-12 cm. longa, 7-14 cm. lata, integra, carnosa, subcrassa, majora digitate nervosa, minor pluvata tri-nervia, glabra, supra viridia, infra glauca et purpurea; petioli gracillimi, 3 cm. longi; folia caulina amplexicaulia, basi cordata, superiora ovata, internodia ovato-oblonga, inferiora subquadrata, apice rotundata, mucronata, 3.5-9 cm. longa, 2.5-5 cm. lata, 3 basi absente tri-nervia, ceterum ut in foliis radicalibus. Capitula axillaria et terminalia, pedunculata, discoidia, pallide flava; pedunculi usque ad 10 cm. longi, circiter 1 mm. crassi; alabastra juniora depressa globosa, purpureo-tincta. Involucra bracteae virides, circiter 8, superne liberae, lanceolatae, apicem 6 mm. longae, marginibus angustis hyalinis, glabrae, 1-3-nerviae. Flores terminali-seriati; achenia fetilla ellipsoidea, glabra, pappi copiosus, albus, 2 mm. longus, corolla nulla; stylus 1.5 mm. longus, ramis crassioribus flavis 1 mm. longis. Flores masculi circiter 20, davi, achenia cylindrica, angusta, non fetilla, 3 mm. longa, glabra; pappi depauperatus, setis circiter 5 albis; corollae tubus inferne cylindricus, superne late campanulatus; lobis 5 triangulari-ovatis, subaequali, 1 mm. longi; antherae exsertae, 1.5 mm. longae; stylus indivisus, apice exserto papilloso.

Habitat:—South Africa. Described from a living plant at Kew (Pearson 404-12), collected by Prof. H. H. W. Pearson in the Prince Albert Division.

there, densely woolly at the apex with light-brown fluffy hairs; stems few (two on the plant seen), very slender, in nature probably procumbent, terete, thinnest about the middle of the internodes, slightly glaucous, glabrous; internodes 7.9 cm. long. Radical leaves petiolate, very broadly ovate or suborbicular, abruptly cuneate or widely cordate at the base, rounded to a mucronate apex, 6-12 cm. long, 7-14 cm. broad, entire, fleshy but not very thick, the largest with digitate nerves, the smaller with about three pairs of lateral nerves, glabrous, green above, glaucous and purplish below; petiole remarkably slender, 3 cm. long; cauline leaves amplexicaul, closely cordate at the base, the uppermost ovate, the intermediate ones ovate-oblong, the lowermost somewhat pandurate, rounded to a mucronate apex, 3.5-9 cm. long, 2.5-5 cm. broad, obscurely trivened from

NOTICES OF BOOKS.

ROCK GARDEN AND ALPINE PLANTS.*

THE reissue of Mr. Sanders' book is proof of its usefulness. Mr. E. H. Jenkins writes of the construction of rock gardens and the cultivation and management of Alpines, Mr. S. Arnott, of the moraine garden, and Mr. T. W. Sanders of water-garden and bog plants. There are copious lists of plants for special purposes for walls, for moraines, for the Alpine house, for the window-box, and there are few subjects dealing with rock plants which do not find some reference in the index. Unfortunately the encyclopaedic character of the book is one of its weaknesses, so much of the material is bewildering to the beginner. He may require three or four hardy Orchids for trial, but the only assist-



FIG. 35.—*OTTHONNA GRACILIPES*: TWO-THIRDS NAT. SIZE, EXCEPT FLORAL DETAILS, WHICH ARE ENLARGED.

the base, similar in texture to the basal leaves and glaucous-purplish below. Flower heads axillary and terminal, pedunculate, discoid, lemon-yellow; peduncles up to 10 cm. long, about 1 mm. thick; buds depressed-globose when quite young and tinged with purple. Involucral bracts green, about 8, connate in the lower two-thirds, lanceolate, acute, 6 mm. long, with narrow hyaline margins, glabrous, 1.3-nerved. Female flowers in a single series around the periphery; achene ellipsoid, glabrous; pappus copious, white, 2 mm. long; corolla nothing; style 1.5 mm. long, with two thickened yellow arms 1 mm. long. Male flowers about 30, yellow; achene cylindric, narrow, not fertile, 3 mm. long, glabrous; pappus poorly developed, with not more than 8 setae, pure white; corolla tube cylindric in the lower two-thirds (2 mm.), broadly campanulate in the upper (1.5 mm.) portion; lobes 5, triangular-ovate, subacute, 1 mm. long; anthers exserted, 1.5 mm. long; style undivided, papillous at the exserted apex. J. Hutchinson, Kew.

ance in the book is a list of thirty-four species, without the least help as to their relative value.

The most readable chapters of the book deal with the cultivation and management of the plants, and one might wish they had been longer. In dealing with the site of the rock garden the subject is handled with less firmness. The author is difficult to follow when he refuses to recommend the formation of rock gardens in positions of extreme exposure and promises greater success in such places by the substitution of Alpine beds or rockery borders.

There is much good practical sense in the section dealing with water gardens, but the author is surely unnecessarily discouraging in the statement that "a frequent change, if not a constant supply, of water is, of course, absolutely necessary to grow Water Lilies successfully." H.

* *Rock Gardens and Alpine Plants, including Water, Bog and Moraine Gardens*. Illustrated in colour, line and half-tone; crown 8vo. By T. W. Sanders and others. (London, W. H. & L. Collingridge, Aldersgate Street.) 3s. 6d. net.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNDELRHOLME, Warton Priory, Yorkshire.

STRAWBERRIES.—When the plants come into bloom increase the temperature of the house to 55° and discontinue syringing. Pollinate the flowers with a rabbit's tail in the middle of the day; this is especially necessary when the weather is dull. After the fruits begin to swell thin them to eight or nine in a pot, use the syringe freely, and raise the night temperature to 60° or 65°, with a suitable increase by day. The use of soot-water, liquid manure, and guano water may be practised at alternate waterings. Place a fresh batch of plants in heat at short intervals according to the requirements of the establishment. Examine each pot for the presence of worms, and see that the drainage is perfect. For the present do not allow the night temperature to exceed 45°.

PEACHES AND NECTARINES.—As soon as the earliest trees pass out of flower the fruits will swell rapidly. Let the night temperature be 55° in cold and 60° in mild weather. Admit a little air when the conditions are favourable, but do not open the ventilators if it would cause a cold current of air to pass over the tender foliage. Syringe the trees in the mornings with soft water 5° to 10° warmer than the house, and again at closing time on bright, sunny days; but in dull weather the morning syringings and dampings will suffice. Plenty of atmospheric moisture in bright weather is essential, but an excess in dull weather results in thin foliage and favours the spread of mildew. Remove entirely or pinch out the points of all shoots which promise to grow gross, according to their position, and disbud the trees at short intervals. Thin the fruits freely but not finally yet; if the trees are in good health and were not overcropped last season, there will be little danger of the fruit dropping. Healthy trees may be allowed to carry fruits at 12 inches apart all over the branches, and even a larger crop if growth is inclined to be gross. On the contrary, weak trees should be cropped lightly. Fumigate the house directly aphid is detected, but before doing this lower the temperature and see that the foliage is dry. Trees in later houses will shortly be in bloom and badly placed and weak flowers should be removed to throw strength into those which are left. Keep the trees dry while they are in flower, and in the middle of the day pollinate the blossoms with a soft brush, but damp the paths and borders each afternoon on sunny days. Watch the trees carefully for the presence of aphid, and take measures to eradicate the pest just before the flowers open, fumigating the house is necessary.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

MASDEVALLIA.—Many Masdevallias are starting into growth, and the present is a suitable time to supply new compost to any that need it. Those of the vigorous-growing section require ample pot room, but the less robust species may be grown in small pans. Members of the *Chimaera* group, which embraces *Backhouseana*, *bella*, *radicalis*, and *Chesteronii*, should be grown in teak-wood baskets without crocks for drainage, as the flower scapes often grow downwards through the sides and bottom of the pan. The pots or pans should be filled nearly one-half of their depth with drainage material, and over this should be placed a thin layer of *Sphagnum* moss. As a rooting medium use *Osmunda* fibre, *Polypodium* fibre, and *Sphagnum* moss in equal proportions, with a sprinkling of crushed crocks to keep the compost open. Specimens that have overgrown their receptacles and become leafless in the centres should be pulled to pieces and repotted in small

pots, or the whole of the old specimen made up into a single compact plant again. If this is done, guard against the danger of over-potting. Make the soil fairly firm, and see that it is not higher than the rim of the pot. Small plants that have filled their pots with roots may be afforded larger receptacles without much disturbance, but those that have space for further development, and with compost in a sweet condition, need not be moved this season. In most cases *Masdevallias* are grown at the warmer end of the cool or Odontoglossum house, the larger-growing sorts being arranged on the stage, whilst small species, such as *M. Arminii*, *M. gemmata*, and *M. tridactylites*, are suspended from the roof rafters. Those of the *Chimaera* group enjoy a few degrees more warmth than the others, and especially in winter months they may be placed near the roof glass of the intermediate division. As *Masdevallias* possess no pseudo-bulbs, they require watering with extra care, and especially after root disturbance, for some of the old leaves will fall if the soil is too wet. When new roots are seen approaching the rim of the pot, and the young leaves are well advanced, the amount of water may be increased with advantage. The plants must never be allowed to suffer from dryness at the base at any time, although they naturally require less moisture in winter than in summer. *Masdevallias* should be protected from strong sunshine, and their surroundings kept tolerably moist, particularly in the growing season. In the autumn and winter the atmosphere should be slightly drier, or black spot may develop. To prevent this disease, attend carefully to ventilating the house, maintaining correct temperatures, and regulating the amount of atmospheric moisture. Thrips occasionally attack these Orchids, and must be kept in check, for they disfigure the foliage. The house should be vapourised directly the presence of insect pests is noticed.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. Lord North, Wrexton Abbey, Banbury, Oxfordshire.

PEAS.—Make a sowing of early peas in boxes of fine soil to succeed those grown in pots. Sow the seeds two and a half inches apart and one inch deep, and germinate them in a cool house, transferring them subsequently to a cold frame. Stand the boxes close to the glass, ventilate the frame freely to harden the plants gradually so that later they may be fully exposed to the air, with the object of obtaining hard, sturdy plants that will be suitable for planting out-of-doors early in March. Little Marvel or some other good dwarf variety is suitable. Early Giant and Grosvenor, sown at the same time, will furnish a good succession of pods.

POTATOS.—Well-sprouted Potato sets may be planted in light, sandy soil on a mild hot-bed in a brick pit, or in pots, which may conveniently be removed from house to house if necessary. Old potting compost, or any light soil containing at least one-third its bulk of leaf-mould or spent mushroom manure, is suitable. Plant the sets nine inches apart in the rows, which should be eighteen inches asunder. Earthing-up should be done when necessary. Guard against frost, and ventilate the frame or house whenever this may be done with safety. Two seed tubers may be placed in a nine or ten inch pot half filled with the compost. Top-dress and stake the plants when necessary. I find that Ninety-fold, which is not first for quality, is our earliest Potato. But Midlothian Early, Sharpe's Express, May Queen, and many other varieties are suitable, and the grower should select the one that succeeds best in his district. An occasional change of stock is necessary, especially for forcing.

HOT-BEDS.—Hot-beds now will prove useful for a variety of early crops. Use a goodly proportion of leaves, if they can be obtained, as they will help to maintain an equable temperature. Turn the fermenting materials several times before they are made into a bed, which should be considerably larger and deeper than those made later in the season. Make the width of the bed sufficient to permit of placing fresh fermenting materials as linings around the sides of the frames.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

DRACAENAS.—A batch of these useful plants should be propagated annually. Old plants, which have become leggy, may be made dwarf again by the process known as "ringing": Strip off some of the lower leaves, and after making a few notches around the stem directly beneath the leaves, tie a ball of moss about the notched portion. Place the plants together in a warm house, and keep them well syringed. In a few weeks the stems will form roots, and the plants may then be potted into 3-inch pots. Keep them close and shaded until the roots grow in the new soil. The stems of useless plants may be cut into small portions to be laid in boxes of soil in which they will readily form roots, provided sufficient warmth is furnished.

ROSES IN POTS.—Pot Roses introduced into heat early in the New Year are growing freely, and require increased attention in watering. When the flower buds are forming feed the roots, using weak soot water alternated with a concentrated fertiliser once or twice weekly. Watch closely for the Rose maggot, which will be active now, and take measures to destroy the pest.

CLIMBING ROSES.—The mild winter has caused Climbing Roses to break into growth much earlier than usual. If the borders have not already received their annual top dressing, it should be placed in position at once, as the roots are growing actively. Roses growing in well-drained borders need copious supplies of water; they should be fed with weak liquid manure, and occasionally with a sprinkling of concentrated manure. When cold winds prevail great care is necessary in ventilating the house, or mildew may appear. An occasional light dusting with flowers of sulphur will help to keep the foliage free from mildew. Ennigate the house occasionally to destroy aphids.

TREE CARNATIONS.—Young plants which were potted last month should be ready for the first stopping of the shoots. Pot later-struck cuttings when they have made sufficient roots, and keep them close for a few days. Cuttings may still be inserted if necessary. Encourage old plants to develop good flowers by watering and feeding them carefully; a light sprinkling of a suitable fertiliser on the surface of the soil will encourage the development of fresh roots.

"MALMAISON" CARNATIONS.—The plants are growing freely and need attention in lying and staking the shoots. Examine the soil frequently for water, which must not be given to excess. The Souvenir de la Malmaison Carnation needs an abundance of fresh air at all times. As a precaution against rust, spray the plants lightly with a suitable specific every week or so.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major Hoare, Elmfield Manor, Basingstoke, Hampshire.

ALTERATIONS.—In gardens where it is decided to undertake any alterations the work should be forwarded, so as to be practically finished by the time the busy season arrives. If we can but get the soil sufficiently dry (and it dries very quickly now with a few days' sun), turf should be laid, as it will involve less labour now than later, when it may need water. Where good, clean turf is available close at hand, it should be used in preference to sowing seed, for the grasses will be those best suited to the locality. Except in the making of playing courts, or in the vicinity of the residence, there is no need for minute attention to levels and gradients provided there is an easy run of lawn with no depressions in which water may collect during storms. The repairing of gravel paths may be more easily be undertaken now because the heavy rain will have shown defects in drainage or in gradients, and if the gravel is laid early the rain which we may still expect will assist in solidifying it.

SOIL FOR SEED SOWING.—The time for seed sowing under glass is at hand, and it will be well to get the soil in readiness. Soil obtained from

Chrysanthemum stools and similar sources, with the addition of leaf-mould and sand, will usually form a compost for seeds. Look over the stock of pans and boxes, mending those of the latter that need it and making others. This work, as well as the sowing of the seeds, may be done on wet days.

SEED SOWING.—Many half-hardy plants intended for summer flowering may be sown now. Chief among these are Asters, Nicotiana, Salpiglossis, Verbena, Lobelia, Alyssum, and Petunia. The seed will germinate freely in a temperature of 50° to 55°, especially if beneath and above the seeds are placed layers of very fine soil, and the boxes or frames put over or near the hot-water pipes. Lobelias are best propagated from cuttings if sufficient stock plants are available, but instead of propagating Koeniga, as used to be the general practice, I obtain equally good results by sowing Alyssum minimum, which is a very close-growing plant.

SWEET PEAS FOR BEDS.—Large square or oval beds sometimes present a difficulty in tilling them with ordinary plants, and a simple and effective method of overcoming this difficulty is to plant them with clumps of Sweet Peas. Circles with a diameter of three feet should be formed at a distance of 7ft. apart, holes made, and the soil prepared for the Sweet Peas in much the same manner as recommended above. A stick should be set in the centre of each circle until planting time, and the rest of the soil dug over. In a large bed 40ft. by 20ft. I arrange fourteen clumps. For a groundwork Antirrhinum of colours to harmonise with the Sweet Peas may be used. Such a bed remains attractive for a long time, and the plants afford a good supply of cut bloom.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

RASPBERRIES.—Take advantage of fine weather to get the Raspberry quarter in good order for the spring. Assuming that the old fruiting canes were removed last autumn, all that is necessary now is to remove weak or superfluous canes. In training the Raspberry allow the canes plenty of space, for there is no advantage in crowding them, and tie them neatly to their supports, according to the system adopted. If ordinary wooden stakes are used, examine them carefully, replacing all that show signs of decay. In arranging the stakes or wires for support let them be of sufficient height to carry the netting used for protecting the crop from birds. Make good blanks in the beds with sturdy young canes lifted with a good ball of earth. These plants will start into growth with scarcely any check. As numbers of filiaous roots grow close to the surface in healthy Raspberry beds, deep digging should not be practised; simply clear off the weeds and lightly fork the surface. When this work is completed apply a thick dressing of manure all over the bed.

PRUNING AND TRAINING WALL TREES.—If the annual cleansing and training of fruit trees has been delayed make every effort to complete the work, as fruit trees are unusually forward this season. Provided the trees were summer-pruned it may only be necessary to remove rough pieces of old wood that were overlooked, training in sufficient young, healthy shoots to furnish the vacant spaces and those required for extension.

GENERAL REMARKS.—When work out-of-doors is hindered by bad weather, stakes and poles may be prepared and pointed, and labels cut and painted. Examine fruit nets in stock to see whether repairs are necessary, and also what quantity of new netting is required for the coming season. Where nails and shreds are used, the old nails that are still serviceable should be placed in a fire before using them again, and the old shreds destroyed. Wire netting surrounding orchards and fruit gardens that are not walled in should be examined and broken places repaired. As an extra precaution, dress the stems with a tree-protecting paint, which will make the bark distasteful to most animals.

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ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

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Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents. — The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News. — Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Illustrations. — The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, FEBRUARY 14.—United Hort. Ben. and Prov. Soc. Coms. meet.
THURSDAY, FEBRUARY 17.—Linnean Soc. meet at 5 p.m.
SATURDAY, FEBRUARY 19.—Lancaster Hort. Soc. meet. (Lecture on Carnations.) B.G.A. (Leamington Branch) meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.4.

ACTUAL TEMPERATURE: Gardener's Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, February 3 (10 a.m.). Bar. 29.85, Temp. 44°. Weather Fine.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY, AND FRIDAY.
Hardy Bulbs and Roots, at 12, Herbaceous Plants, Shrubs, and Roses, at 1.30. By Protheroe and Morris.
MONDAY AND WEDNESDAY.
Rose Trees, Shrubs, Perennials, Fruit Trees, etc., at Stevens' Rooms, 38, King Street, Covent Garden.
WEDNESDAY, THURSDAY, AND FRIDAY.
Nursery Stock, at Waterer's Nursery, Bagshot, by Protheroe and Morris, at 12.
WEDNESDAY.
The "Marlfield" collection of Orchids, at Marlfield, West Derby, Liverpool, by Protheroe and Morris, at 11.30.
Palms, Azaleas, Bays, etc., at 1.30; 876 cases of Japanese Lilies at 3, by Protheroe and Morris.
THURSDAY.
Roses, by Protheroe and Morris, at 1.

During his recent visit to France, Lord Grenfell, the President of the Royal Horticultural Society, had the opportunity of visiting some of the Base camps and hospitals which have been established behind the British lines in France, and of learning from the officers in charge how desirable it would be if the grounds attached to these establishments could be converted into gardens. Convalescent soldiers would thereby find congenial and healthful occupation, and their recovery would be expedited. The camps themselves, which at present, in some cases at all events, consist of huts in a desert of mud, would be rendered less depressing, and the work of those in charge of their maintenance would be considerably lightened. Lord Grenfell laid these facts be-

fore the Council of the R.H.S. some months ago, and as the result of his initiative some of the leading firms were invited to make contributions of bulbs for the purpose of planting in the hospital grounds. The response to this appeal was most generous, and led to the despatch of about one ton of bulbs, which have been planted in the camps at Etaples and elsewhere in Flanders. In the meanwhile the R.H.S. had under consideration the larger plan of sending out in early spring consignments of flower and vegetable seeds and plants for cultivation by our convalescent soldiers. In the belief in the serious usefulness of this plan the Council of the Society was the more encouraged by the contents of letters received from officers in charge of the camps. These letters pointed out the many advantages which would follow from a prompt undertaking of this work. Some showed, in pathetic manner, the keenness of the soldiers in cultivating plants; some of the men in their eagerness to grow something going the length of buying plants in flower and planting them around their huts. After careful consideration the Council decided to invite the military authorities to give permission and facilities for a deputation consisting of three experts to visit the Base hospitals and camps in the several districts into which the military command in France is divided; to measure the ground available, observe its nature and possibilities, and to make arrangements on the spot for the working of the land, the reception of consignments of vegetable and flower seeds, and their planting. The Council, moreover, decided to provide the funds necessary for carrying out this work. This admirable scheme will, we hope, commend itself to the military authorities. For to send consignments of seeds without the detailed knowledge above referred to is bound to lead to waste and failure. Some of the hard-worked officers in charge of the camps may well be excused if they lack a knowledge of or interest in gardening, and in such cases it is only too probable that the seeds would never get planted, or if planted would not receive proper treatment. Nor can it be expected that the officers in charge, except in occasional cases, would be able to give the necessary information as to soil and site. If, on the other hand, the deputation is so fortunate as to receive the permission asked for, it could, in the course of a week or so, collect all the information needed, and thus secure that these camps should be made bright and cheerful and productive during the coming season. It should not be forgotten that though the war may come soon to an end, the camps or many of them — must continue for a long time to come. It would be as fine a thing as novel if, after the war is over, men might point to the ground occupied by our soldiers and say, "These smiling gardens are those that the wounded of the British Army planted." On the utilitarian side we need not insist, for it is self-evident that supplies of fresh vegetables would be welcome even to the well-fed British soldier. Therefore, although we well understand that the mili-

tary authorities are primarily concerned with great and grave issues, we hope that they may spare a moment for the consideration of this project, relatively small but undoubtedly useful; for if they can, there is no doubt but that it will receive their sanction.

It was during the great wars that Bremondier obtained from the much-harrassed Napoleon the permission and the funds to reclaim the Landes round what is now, as a result of his work, the health resort of Arcachon; may we not therefore hope that the useful project of the R.H.S., which asks for no funds, may receive the sanction for which it waits!

OUR FRENCH PAGE.—After a period extending well over a year our French page, instituted for the benefit of Belgian and French gardeners in this country, comes to an end with the present sixty-sixth issue. Mr. VAN ORSHOVEN, to whose experience and knowledge of Belgian horticulture we are so deeply indebted, points out with justice in his valedictory remarks, that those for whom the page was intended have now become so familiar with the English language as no longer to need to seek for horticultural information in their mother tongue. For our part we have pleasure in acknowledging the admirable manner in which Monsieur VAN ORSHOVEN has edited the French page, and hope that the new friends which that page has enabled us to make, will continue to regard the *Gardeners' Chronicle* and its readers as being as anxious as ever to make their sojourn in this country as agreeable as the sad circumstances permit.

HORTICULTURAL CLUB.—The annual meeting of members of the Horticultural Club will take place in the Club Room, Hotel Windsor, on Tuesday, February 22, at 5.30 p.m. Sir FRANK CRISP, Bt., president, will preside. The meeting will not be followed on this occasion by the usual dinner, this latter event being postponed until April.

BOARD OF AGRICULTURE APPOINTMENTS.—The Hon. E. G. STRETT, and Sir LUKE WHITE, M.P., have been appointed additional members of the Departmental Committee on the Settlement and Employment on the Land of Discharged Sailors and Soldiers. The committee, which was appointed by Lord SELBORNE in July last, has presented the first part of its report dealing with settlement, and is considering the second part, which will deal with employment.

DR. GORDON HEWITT.—We learn with pleasure that Dr. GORDON HEWITT, Dominion entomologist of Canada, and an occasional contributor to these columns, has been elected president of the American Association of Economic Entomologists for the present year.

GEO. MONRO CONCERT.—The twentieth annual "Geo. Monro Concert" will be held at the Queen's Hall, Langham Place, W., on Thursday, the 17th inst. The artistes will include a number of popular performers, and the band of the Coldstream Guards will also give selections under the direction of Captain Rogan. The last concert resulted in a profit of about £35, which was distributed to various charitable institutions.

THE MARLFIELD COLLECTION OF ORCHIDS.—MESSRS. PROTHEROE AND MORRIS announce that they are instructed by Mrs. LE DOUX to sell the entire collection of Orchids formed by the late RICHARD LE DOUX, Esq., upon the premises, Marlfield, West Derby, near Liverpool, on Wednesday, February 16. The collection, which is rich in *Odontoglossums*, *Cypripediums*,

Cattleys and Laelio-Cattleys, include unique specimens of very choice varieties.

NOTICE TO FARMERS.—The Military Service Act, 1916, applies to all British subjects who:—(1) Were ordinarily resident in Great Britain on August 15, 1915, or have become or hereafter become ordinarily resident in Great Britain since that date; (2) had attained the age of 18 years on August 15, 1915, and had not attained the age of 41 before the "appointed date" (March 2, 1916); (3) were on November 2, 1915, single or were widowers without children dependent on them, subject to certain exceptions, amongst which are:—(a) Members of His Majesty's Regular or Reserve forces; (b) men who have left or been discharged from the naval or military service of the Crown in consequence of disablement or ill health; (c) men who have offered themselves for enlistment and have been rejected since August 14, 1915. The Act does not apply to men who voluntarily attested under the Group System (commonly known as Lord Derby's Scheme) in Section B, Army Reserve, and who are entitled to wear an armlet as being soldiers in the Reserve. Every man to whom the Act applies, and who is not included in the list of exceptions, will, on the appointed date (March 2, 1916), be deemed to have been enlisted and to have been passed to the Reserve. Under Section 2 (2) of the Act, Government Departments are empowered to certify that men engaged in certain occupations known as "certified occupations" may be exempted on the ground that the work of such men is work of national importance; and the agricultural occupations which have been so certified by the Board of Agriculture and Fisheries are at follows:—Agricultural machinery, steam ploughs and threshing machines—attendant, driver, mechanic. Farm bailiff, foreman, grieve, steward; farm beastman, byreman, cattleman, stockman, yardman; farm carter, horseman, ploughman, teamster, waggoner; farm hind (if foreman or ploughman); farm servant (if foreman or ploughman) (Scotland); farm shepherd, thatcher. Farmer (including market gardener and fruit farmer) provided that (a) farming is his sole occupation and his personal labour or superintendence is indispensable for the proper cultivation of his holding; or (b) if he is partly occupied in another occupation and his personal labour or superintendence is indispensable for the proper cultivation of his holding, and such cultivation is expedient in the national interest. Hop, fruit and market gardens—foreman in all departments. Stallion man (a man who looks after and travels a stallion). Stud groom (Scotland). It will be seen that these "certified occupations" are the same as those hitherto known as "starred" or "reserved" occupations, with some additions and revisions, notably that of "farmer (including market gardener and fruit farmer)." The only persons entitled to be exempted on account of being employed in the "certified occupations" are those whose principal and usual occupation is one of those included in the above list. By the use of the term "principal and usual occupation" it is intended to exclude from exemption those persons who may be only occasionally employed in work of a kind similar to that of one of the occupations, but who do not follow it in any regular fashion and are not really engaged in the occupation in the proper sense of the word. Application must be made for a certificate of exemption in the case of every man in one of the "certified occupations" who has not attested and who desires to be exempted from the provisions of the Act. The fact that he may have already been "starred" or included in the list of "reserved occupations" makes no difference in this respect. Applications for exemption must be made to the Local Tribunal before the appointed date, which is March 2, 1916, and may be made either by the man himself who desires

exemption, or by some person (his employer, for example) in respect of him. It will be an advantage that in the case of an employed person a signed statement should be furnished from the employer giving full particulars of the man's occupation.

SOCIETY TO ENCOURAGE THE CULTIVATION OF HERBS.—An organisation has recently been established for encouraging the cultivation of medical herbs in this country, under the title of The Herb-Growing Association, affiliated to The Women's Farm and Garden Union. Members may join on payment of 5s. per annum. Over 300 members have been enrolled. It is hoped that by co-operation the growing of different herbs will be regulated, so that the

market may not be overstocked with some, or be short of other, varieties. Anyone wishing to help in the development of this industry is requested to communicate, as it is now that the supply from Central Europe is stopped that it is possible to keep the industry in this country. Communications may be addressed to The Secretary, 45-46, Queen Anne's Chambers, Westminster.



FIG. 36.—MR. REGINALD FARRER'S EXPLORATIONS: THE PURPLISH-VIOLET DELPHINIUM ON WOLVESDEN PASS. (See p. 86.)

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DEMAND FOR WALNUT LEAVES IN FRANCE. A note in the *Journal of the Royal Society of Arts* (Jan. 28, 1916) calls attention to a demand in France for dried Walnut leaves. Used largely in pharmacy, the leaves were supplied in normal times from the Department of Aisne, now occu-

SULPHATE OF AMMONIA FOR FARMERS.

It is announced that in view of the uncertainty of the sufficiency of supplies of sulphate of ammonia during the next few months, licence to export this fertiliser has been withdrawn for the present. It is greatly to be hoped that farmers will take advantage of the increased supply of sulphate of ammonia thus put at their disposal. In particular those who have been used to employ nitrate of soda should give the home-product a turn. It will not only benefit their land, but will help the country. For it is well known that there is a scarcity of shipping,

and whereas all supplies of nitrate of soda have to be imported, sulphate of ammonia, a by-product from our gas factories, is made at home. Having regard to the large quantity of sulphate of ammonia produced in this country, there is no reason whatever why all the requirements of farmers with respect to quick-acting nitrogenous manures should not be met from this source.

WAR ITEM.—The profits of the Gainsborough Chrysanthemum Society's exhibition held on November 17 and 18, 1915, amounting to £73, has been distributed as follows:—Local Belgian Relief Fund, £40; Local Belgian Army Comfort Clothing Fund, £16 10s.; and the Red Cross Society, £16 10s.

POUR NOS AMIS FRANÇAIS ET BELGES.

CHRONIQUE SPÉCIALE (LXVI).

À NOS LECTEURS.

Notre page française est entrée dans sa seizième année de son existence. Son apparition, en novembre, 1914, répondait à un besoin réel des nombreux horticulteurs alliés réfugiés en Angleterre, que nous nous sommes efforcés de renseigner sur les personnes et les choses en rapport avec l'horticulture de leur pays. A diverses reprises aussi nous avons touché aux problèmes économiques que seront soulevés après la guerre et dont beaucoup d'intéressés s'occupent dès à présent.

Aujourd'hui cependant, la plupart de nos amis résidant en Angleterre se sont suffisamment familiarisés avec la langue pour comprendre les textes anglais. D'autre part, nos confrères français paraissent à peu près normalement et nous sommes convaincus que la nécessité d'une page française est devenue moins urgente, du moment que les nouvelles que nous y résumons continuent à trouver leur place dans le *Gardeners' Chronicle*. C'est ce qui nous a fait proposer sa suppression. Nous continuons toutefois notre collaboration au grand confrère avec lequel nous avons établi des relations aussi cordiales, et toutes les nouvelles intéressant le monde horticole qui nous parviendront de la patrie opprimée, des pays neutres et même des pays ennemis seront, comme précédemment, publiés par le *Gardeners' Chronicle*.

L'OBSTZENTRALE EN BELGIQUE.

Les Allemands continuent leurs envois de l'Obstzentrale de Bruxelles en Hollande. Le prix est momentanément tombé à 25 cents le kilo, ce qui leur assure encore un bénéfice de 100 pour cent. Néanmoins la presse allemande prétend toujours que la création de l'Obstzentrale a eu surtout pour but la défense des intérêts de la culture belge en mettant fin à "l'exploitation" par les intermédiaires!

Les exportateurs belges établis en Hollande ont refusé de traiter avec l'Obstzentrale bien que des offres leur aient été faites. Les achats sont conclus par des négociants néerlandais seulement.

Nous avons fait connaître dans notre dernier numéro les conditions dans lesquelles l'Obstzentrale opère pour les fruits de verger. En ce qui concerne les primeurs, nos lecteurs sont au courant de la solution transactionnelle consentie par les autorités allemandes, les meilleurs produits pouvant être fournis directement à la clientèle ordinaire. C'est ainsi que les variétés suivantes de Raisin : Gros Colman, Muscat d'Alexandrie, Gros Boné et Foster's White Seedling ne doivent pas être cédées à l'Obstzentrale et peuvent encore être écoulées par les Halles des Producteurs. Les meilleurs Frankenthaler sont également exclus, les autres raisins classés en catégories tarifées par l'Obstzentrale. En automne ces tarifs étaient de 50, 70 et 90 centimes le kilo. Le marchand pouvait intervenir pour l'emballage et porter en compte de ce chef 3 centimes au kilo!

L'Obstzentrale ne manque pas de faire argent dans ces conditions. Du Raisin que le producteur avait été obligé de céder à 70 centimes, fut vendu au marchand allemand, à raison de 1 fr. 65.

Au mois d'octobre les cours étaient les suivants :

	1 ^{re} Qual.	2 ^e Qual.	3 ^e Qual.
Frankenthaler	0.90-1.10	0.60-0.80	0.30-0.50
Black Alicante	0.90-1.30	0.60-0.80	0.30-0.50
Gros Colman	1.10-1.50	1.00-1.30	0.60-0.90
Muscat d'Alexandrie	1.50-2.00	1.00-1.30	0.60-0.90
Gros Maroc	1.10-1.70	0.90-1.30	0.60-0.80
Alphonse Lavallée	1.20-1.40	0.70-1.10	0.50-0.60

Lors des réunions des fonctionnaires de l'Obstzentrale, au cours desquelles les cours

sont arrêtés, le Président des Halles des Producteurs et un délégué des marchands sont convoqués. On les consulte.

NOUVELLES DIVERSES.

AIDE DES MARAÎCHERS POUR LES BLESSÉS.— Le syndicat des Maraîchers d'Hyères a mis sur pied une organisation complète pour faire parvenir des légumes frais aux soldats français blessés. Des le mois de février, 1915, des wagons remplis de salades, de Choux, d'Artichauts, de Choux-fleurs, etc., partirent chaque semaine à destination de la gare du Nord. Là, un commissaire militaire les dirigeait, suivant les indications de l'Etat Major, vers les formations combattantes du front. Les maraîchers de Châteaurenard ont également contribué à l'oeuvre et au mois de juin seulement ils expédiaient une vingtaine de wagons, représentant plus de 100.000 kilos de légumes.

LES CHOUX COMME PLANTES MÉDICINALES.— Les légumes ont non seulement affirmé de façon irréfutable leur valeur alimentaire, mais voilà aussi que le Chou rouge est préconisé comme remède contre les maladies intestinales. C'est le Dr. Simon Zeisel de Vienne qui pousse à l'extension de la culture, et on est occupé à construire une usine pour le traitement des Choux en vue de l'extraction du produit.

L'IMPORTATION DE FRUITS EN GRANDE BRETAGNE. Ainsi que nous l'avons fait prévoir, une opposition assez vive se manifeste contre la prohibition annoncée de l'importation de fruits exotiques. On se base sur la valeur alimentaire de certains fruits, sur le coup que la mesure porterait aux intérêts de certains pays amis et même des colonies britanniques, sur les installations rudimentaires des bateaux servant au transport des fruits vivants, etc.

L'exemption annoncée pour les Bananes est critiquée à divers titres. Ces fruits ne proviendraient en réalité de colonies anglaises qu'en proportion extrêmement faible, le tonnage serait considérable (250.000 tonnes par an) et les navires sont pourvus des derniers perfectionnements requis pour le transport des denrées alimentaires. Ils conviendraient beaucoup mieux pour les besoins des autorités militaires que les bateaux lents et surannés qui amènent les Raisins d'Espagne, de valeur alimentaire reconnue, les Citrons et Oranges de la Méditerranée qui sont considérés comme indispensables.

On fait valoir d'autre part que la suppression des envois de fruits étrangers frapperait les nombreux détaillants et aurait pour résultat de faire remplacer des aliments sains et économiques par des friandises sans grande valeur alimentaire.

LE MARCHÉ EN HOLLANDE.— La plupart des coopératives de vente publient actuellement le bilan de leurs opérations au cours de l'année écoulée. Il en résulte qu'effectivement le chiffre d'affaires a partout augmenté ainsi que tout le faisait prévoir.

A Loosduinen, bien connu des horticulteurs étrangers pour ses installations qui constituent des modèles du genre, le total réalisé a passé de 4.500.000 fr. en 1914 à 4.600.000 fr., soit un surplus de 7 pour cent environ. Il est évident que ce n'est pas excessif et que l'augmentation de la main-d'oeuvre et des matières premières absorbent à peu près cette différence. Toutefois, lorsque les produits sont chers, la vente en culture est plus facile et il ne faudrait pas s'étonner que le chiffre d'affaires réel des maraîchers de Loosduinen est bien plus favorable qu'il ne paraît.

Dans le Westland, les trois grandes coopératives atteignent le total de 4.400.000 francs, une augmentation de 1.200.000 fr. On estime qu'en y ajoutant le chiffre des petites ventes, la différence dépasse 2 millions (plus de huit millions au lieu de six). Ce n'est pas mal.

Les opérations de l'Obstzentrale qui, de l'avis des Hollandais, a "réquisitionné en Belgique des fruits à des prix anormalement bas," pour les mettre à la disposition du consommateur allemand, ont nui aux cours des fruits de verger que l'acheteur d'Outre-Rhin prétendait obtenir à des prix analogues. Les Hollandais ont d'une façon générale, résisté et refusé de vendre. Lorsque les stocks belges furent enlevés, les Allemands se trouvèrent dans l'obligation de devenir plus traitables, et les droits d'entrée qui frappent les Pommes dès le 1^{er} décembre, furent abolis un mois plus tard. Néanmoins le débouché allemand a été assez lent parce que le change défavorable force de 30 ou 35 pour cent le compte présenté à l'acheteur sans que le vendeur en profite. Les opérations ont surtout été importantes pour les fruits de qualité inférieure qui ont rencontré en Allemagne une demande très suivie. Cela résulte de la rareté du beurre dont on préconise partout le remplacement par des confitures.

LES FRUITS DU CAP.— Les derniers envois de fruits sud-africains renferment des caisses de qualité superbe. Aussi les magasins "chics" ont pu en faire un magnifique étalage. Les Pêches et Brugnon valent jusqu'à 7 ou 8 pence pièce dans le commerce en gros, et atteignent 1s. 6d. chez les détaillants. Les Prunes aussi, d'un rouge foncé, sont belles. Quelques rares colts de Reines-claude sont remarquables par les dimensions des fruits. Les Poires ont également été représentées dans les derniers envois par des beaux spécimens de Clapp's Favourite et de Bon Chrétien William. Les premiers Raisins sont également arrivés.

On ignore encore dans les milieux intéressés si les fruits du Cap seront frappés par les mesures restrictives destinées à rendre du tonnage disponible. Elles seraient de nature à causer un grand préjudice aux producteurs de la colonie du Cap dont le marché distributeur au Continent, Hambourg, est déjà fermé par suite de la guerre. Il y a lieu de remarquer cependant que la saison pourrait être virtuellement finie lorsque les prescriptions entrèrent en vigueur.

KORT OVERZICHT VOOR DE VLAMINGEN.

DAAR onze lezers nu meestal de Engelsche taal machtig zijn, zullen de inlichtingen der Fransch-Vlaamsche bladzijde voortaan in het Engelsche deel van *The Gardeners' Chronicle* opgenomen worden.

De Duitschers voeren nog Witloof uit naar Holland. Door de Belgische handelaars wordt echter niet gekocht daar de kweekers er geen belang bij hebben.

De handel van druiven met Deutschland wordt ook door hunne verordeningen geregeld. Ze laten niet er geld mede to slaan. Wat ze den kweeker verplichtten tegen 70 centiemen af te staan, verkochten ze tegen 1 fr. 65.

Veel Kaapvruchten komen thans in Londen aan. Ze zijn ook van allerbeste hoedanigheid.

Er worden van ambtswege nog geen bijzonderheden gegeven over het beperken van den fruitvoer. Zooals verwacht, wordt van nu af eene beweging op touw gezet om dien maatregel niet al te streng te maken.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

GARDENERS AND EXPERIMENTS.—I get into touch with a good many gardeners, both amateur and professional, but I find that at least 80 per cent. of both classes seldom, if ever, make experiments. I have been told by them that they have done things this way for the last 20 years, and that they do not see any good in trying to find a better way or a more economical way of working. "Experiments," they say, "take up a vast lot of valuable time, and never produce results which are worth anything, so why waste time on them?" But that is what a protest should be made against. Other nations are far keener and greater on experiment than we English are, and I think it should be somewhat of a disgrace on us. A good many problems have been solved at one time or another by small private experimenters of foreign nations, and foreigners have remarked to me that English people, and English head gardeners included, have not nearly enough initiative, and do not show themselves interested in the solution of scientific horticultural problems. Your valuable paper, Sirs, goes all over England, and is the most widely read paper by head gardeners, and so I write to you in the hope that you will put this matter seriously before your readers. English head gardeners could, if they would, do a very great deal for horticulture if they would only take the trouble to carry out a few careful experiments each year. Gardening papers are always glad to hear from the man who has carried out individual experiments, however unimportant they may at first seem, and much very valuable information could be accumulated and published which would be of great assistance to other gardeners. Experiments, though at first sight appearing waste of time, labour and money, are not really so, and I may say that I have found it a great deal more than merely worth while to conduct a few experiments in this garden every season. As regards subjects for experiment, these are far too numerous to detail. But experiments with various simple artificial manures, home-made soil fumigants, and washes for the fighting of diseases on plants and trees, are some of the most useful branches for work. Careful notes and dates, etc., should be kept, and the results reported in the Press. We are told that the first months of the new year are the best times for making resolutions, so I ask every reader who can, "Would it not be a very good resolution to make up your mind to carry through during this year at least one careful experiment?" E. T. Ellis, Westwood, Ecclesall, Sheffield.

VITIS THUNBERGII.—Mr. Rowles in his interesting list of wall climbers on p. 75 includes *Vitis Coignetiae* but does not mention the much superior *V. Thunbergii*, which, from a colour point of view in the autumn, is much better than *V. Coignetiae*, the leaves of which seldom colour beyond a dull tint. So far as growth is concerned the latter is perhaps superior, but the pleasing and gorgeous tints of *V. Thunbergii* are so superior that where one variety only is required then *V. Thunbergii* should be planted. E. M.

PETASITES FRAGRANS.—In the interesting "Notes from a Cotswold Garden" (*Gard. Chron.*, p. 71), mention is made of the winter *Heliotrope Petasites fragrans*. This species has become naturalised, and there are large breadths growing and flowering freely on the shore at Hunter's Quay, Argyllshire. In spite of the rough weather of the past few weeks, the flowers to-day are fresh and fragrant; indeed, in so far as this particular district is concerned, it seems almost superfluous to recommend potting up the growths and flowering them indoors. Jonathan Fiona, Ultima, N.B.

HARDINESS OF PRIMULA MALACOIDES.—I was astonished recently to find two healthy plants of *Primula malacoides* flourishing out-of-doors on a gravel path where they had been missed when hoeing the gravel last autumn. They have survived a long spell of frost—not very severe it is true, 14° being the lowest figure registered, but it shows that this species is much harder than anticipated, and probably it may yet establish itself as a naturalised hardy

plant. R. P. Brotherston, Tynninghame Gardens, Prestonkirk.

"PAINSTAKING PRUNING."—I was amused by a photograph which appeared in a recent issue of a leading London daily. It depicted a lady engaged in "pruning" some fruit trees. Presumably the object of the photograph was to illustrate the fact that men serving their country on distant battlefields can be efficiently replaced by female labour. Unfortunately, the primer is shown to be using a most unconventional implement—namely, a pair of ordinary hedge shears. P. W. Miles, Ware Park Gardens, Ware, Herts.

DOUBLE STOCKS (see p. 76).—In your leading article on "Double Stocks," you raise the question: Do the less vigorous plants throw on an average a higher percentage of doubles than the more vigorous? I say no. A few years ago I grew stocks on a large scale for a private place. In one year over 90 per cent. came single. My employer, in disgust, picked a large handful and sent them to the seedsmen, demanding the meaning of having such rubbish. The answer was that the gardener must have selected the vigorous plants, and thrown away the less vigorous. Now it happened, that year, that I had retained every plant, as we were short. Ever since then I have retained the less vigorous plants, to see if there was anything in what the seedsmen said, but cannot find the least difference. J. F. M.

BELGIAN SOLDIERS IN HOLLAND. We venture to appeal to men of science to help in the admirable work which is being done by Prof. Antoine, of Louvain, on behalf of Belgian soldiers who escaped with our Naval Division from Antwerp, and are now interned in Holland. With the sympathetic approval of the Dutch authorities, Prof. Antoine has organised at Hardewijk, in the camp of Zeist, courses of instruction in agriculture and horticulture, and hopes to start a course of forestry. Lectures are given in elementary botany, chemistry, and surveying. In addition to these general lectures, special courses are given on general agriculture, diseases of plants, agricultural machinery, book keeping, the elements of zoology and animal physiology of farm animals. A general course in dairy work, and special courses on the chief branches of horticulture are also to be included in the programme. Thorough and well-lit rooms are available for the purpose of instruction, but there is a great need for teaching accessories—diagrams, models and collections. We appeal, therefore, to your readers for help in supplying the following requisites:—(1) Wall diagrams, botanical and zoological (the latter relating to insects and farm animals); (2) An electric lantern and lantern slides illustrative of natural science and agricultural and horticultural processes; (3) Books on British agriculture and horticulture; (4) Surveying instruments; (5) Zoological and botanical models and specimens; (6) microscopes, simple and compound, and accessories. We shall be greatly obliged if those of your readers who are in a position to make contributions will, in the first place, communicate with M. N. van Orshoven, Comité Officiel Belge, 21, St. James' Square, London, S.W. Already direct appeal to manufacturers, publishers, and others has resulted in many gifts of samples of feeding stuffs, fertilisers, seeds, books, diagrams, etc. We may add that at the end of the war Prof. Antoine proposes to present the collections to the University of Louvain. Judging from our own experience, there are few laboratories which do not contain diagrams and apparatus, which, though they have passed out of current use, are none the less valuable. A spring cleaning of the laboratories would result in many useful discoveries of this kind, and the dedicating of them to this purpose would "bless him that gives" as well as "him that takes." William Somerville, Frederick Keeble.

*** * * NEW POSTAL RATES.**—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of 3d. every two ounces.

SOCIETIES.

ROYAL HORTICULTURAL.

FEBRUARY 8.—The one hundredth and twelfth annual meeting of the Royal Horticultural Society was held on Tuesday last in the Hall, Vincent Square, Westminster. The attendance was larger than at previous shows this season, but only a moderate number of the Fellows were present in the Lecture Room at the 3 o'clock meeting, of which particulars are given below.

The Floral Committee recommended three Awards of Merit to novelties, and twenty Medals for groups, the most imposing individual collection being of forced shrubs, for which a Gold Medal was awarded.

The Orchid Committee recommended three Awards of Merit to novelties and eight Medals to groups.

The Fruit and Vegetable Committee found very little for its deliberations, and the only award in this section was a Bronze Medal for a collection of Apples.

Floral Committee.

Present: Mr. H. B. May (in the chair), Messrs. G. Reuthe, J. W. Moorman, C. R. Fielder, G. Harrow, J. Green, W. Howe, J. Heal, W. Eam, J. Dickson, C. Dixon, A. Turner, A. G. Jackman, W. Cuthbertson, C. E. Pearson, W. P. Thomson, J. T. Bennett-Poë, H. Cowley, E. H. Jenkins, G. Paul, E. A. Bowles, W. B. Cranfield, W. J. Bean, J. W. Blakey, J. Hudson, R. Hooper Pearson, Sydney Morris, J. W. Barr, R. W. Wallace, J. Jennings, W. H. Page and Ed. Mawley.

AWARDS OF MERIT.

Lachnalia Rosemary.—This is an exceptionally fine variety. The spike is vigorous, and carries large bells; the leafage, too, is robust and broad. But the chief beauty lies in the beautiful colouring of the flowers, the predominating tone being orange-red, the upper portion of the spike itself being of this colour. The middle of the sepals and petals are greenish-yellow, the tips of the sepals being deep green, and there is a broad band of dark crimson or plum colour on the ends of the petals. Shown by Rev. J. Jacob, Whitwell Rectory, Shropshire.

Berberis japonica var. Bealei.—This is the shrub figured as *Berberis Bealei* in the *Botanical Magazine*, tab. 4,852. It is distinguished from other forms by its four or five pairs of larger, broader leaflets, with generally fewer spines. The flowering season is from January until March. The lemon-yellow flowers are freely borne on stiff racemes. The plant was first introduced from China in 1845 by Robert Fortune. Exhibited by ELIZABETH LADY LAWRENCE, Burford, Dorking (gr. Mr. W. Bain).

Berberis japonica var. hyemalis. This distinct variety flowers practically throughout the winter from October or November until March. It was exhibited by Mr. G. REUTHE, Keston, Kent. This form differs from *Bealei* in having one or two more pairs of leaflets which are smaller, a much more elongated inflorescence, flowers earlier, and has a stronger fragrance. Whilst in favourable weather *Bealei* produces purple fruits freely, on the var. *hyemalis* the fruits seldom mature.

OTHER NOVELTIES

MESSRS. SUTTON AND SONS, Reading, exhibited a plant of *Cyclamen latifolium*, raised from seed, gathered wild by Mr. A. Sutton in Palestine in 1914. The flowers were smaller than those of the cultivated varieties, but they were exceedingly graceful and pretty on tall, arching stalks, and the foliage was most beautifully variegated. This firm also showed a fine fringed white *Cyclamen*.

Mr. W. WEST, Holt Hatch, near Alton, exhibited flowering shoots of *Acacia dealbata* from his conservatory, the inflorescences being far superior to those imported at this season from the South of France, whilst the silver-grey of the leaves and stems seemed also more pronounced.

MESSRS. R. FELTON AND SONS, Hanover Square, showed an unnamed *Eucalyptus* which had a dense ring of cream-coloured anthers and yel-

lowish capsules stained with red. The shoots, with their semitriangular leaves and curious flowers were very ornamental.

GROUPS.

The following medals were awarded for collections:—

Gold Medal to Messrs. R. AND G. CUTHBERT, Southgate, for forced shrubs. This imposing exhibit presented a bank of bright flowers, and was of a highly decorative character. Tall standards of Lilac, Laburnum, Forsythia, Pyrus floribunda, Azalea mollis, and similar subjects, with big bushes of Magnolias and the graceful Wistaria sinensis were arranged over a ground of dwarfed Lilacs, Spruces, Prunus triloba, and Rhododendrons (including Azaleas), in great variety, with handsome Japanese Maples, Ferns, and Palms for a setting.

Silver Flora Medals to Mr. L. R. RUSSELL, Richmond, Surrey, for flowering and ornamental-leaved shrubs, including many varieties of Azalea, flowering profusely; Messrs. W. CUTHBERT AND SON, Highgate, for forced shrubs, Alpines, and Carnations; Mr. AMOS PERRY, Enfield, for hardy Ferns, the beautiful Shortia uniflora grandiflora that received an Award of Merit last season, and Saxifrages. Messrs. WATERER, SONS, AND CRISP, LTD., Twyford, Berkshire, for a rockery planted very effectively with early blooming Alpines. A batch of the purple Sisyrinchium grandiflorum was conspicuous, and in contrast was a neat patch of the beautiful blue Anemone blanda, whilst a drift of Saxifraga oppositifolia splendens, at one end, with S. Boydii alba on an adjacent bluff, was a bit of clever planting; and Mr. J. J. KETTER, Corfe Mulin, Wimborne, for Violets.

Silver Banksian Medals to Messrs. BARR AND SONS, King Street, Covent Garden, for pigny trees in porcelain pots, and spring flowers. Crocuses were represented by such beautiful species as C. Alexandria, which has a flush of mauve-purple on a white ground; C. Tommasianus, of rosy-purple colour, with conspicuous orange-coloured stigmata, and the new variety of biflorus breed named Lemon Queen, of regular form and creamy-yellow colour, the interior revealing a beautiful touch of colour, in the rich red stigmata. Messrs. BLACKMORE AND LANGDON, Bath, for Begonias and Cyclamens. The former were improved varieties of the semperflorens type, the best being Brilliant (crimson-scarlet), Pink Beauty and Virginalis (white). The Cyclamens were like great posies of flowers arising from a mass of tinted foliage, their new variety, Salmon Pink, as shown, being as floriferous as any of these flowers we have seen. Messrs. H. B. MAY AND SONS, Edmonton, for a table of exotic and native Ferns, amongst which were arranged finely flowered Cyclamens and Cinerarias; R. MOND Esq., Combe Bank, near Sevenoaks (gr. Mr. Hall), for a group of Freesias; Messrs. J. PIPER AND SONS, Bayswater, for Alpines; Mr. M. PRICHARD, Christchurch, Hampshire, for hardy flowers; The Marguets of Ripon, Kingston Hill, for spring flowers; Messrs. T. S. WARE, LTD., Feltham, for hardy flowers; Messrs. W. WELLS AND CO., LTD., Merstham, for Carnations, the variety Pink Sensation being much superior to any other in the exhibit; Messrs. J. CARTER AND CO., Raynes Park, for a new variety of Primula malacoides, with rich-rose coloured flowers. This was a charming group, being staged with fine effect, the plants being arranged in three half-circular bays, each surmounted by a graceful Cocos Palm and a row of succulent Primulas as an edging, with two charming pictures in colours of a water scene with a stream border and a grassy glade with herbaceous borders on either side, as a background; and Messrs. STEUER LOW AND CO., Enfield, for Carnations and Cyclamens.

Bronze Banksian Medals to Messrs. ALLWOOD BROS., Wivelsfield, for perpetual-flowering Carnations; Mr. W. MILLER, Wisbech, for hardy plants; Mr. J. BOX, Lindfield, for Primula malacoides robusta; Messrs. WHITELEG AND PAGE, Chislehurst, for Alpines; and Messrs. J. CHEAL AND SONS, Crawley, for shrubs and Alpines.

Orchid Committee.

President: Mr. J. Gurney Fowler (in the chair). Sir Jeremiah Colman, Bart., Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary),

Gurney Wilson, R. A. Rolfe, F. J. Haubury, R. G. Thwaites, Pantia Ralli, E. R. Ashton, T. Armstrong, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, J. E. Shill, C. H. Curtis, A. Dye, W. H. White, S. W. Flory, W. Bolton, R. Brooman White and C. Cookson.

ORCHID AWARDS, 1859-1915.

The Chairman, J. Gurney Fowler, Esq., presented a copy of the complete list of awards, and informed the committee that they were now obtainable at the office of the R.H.S. On the proposition of Sir Jeremiah Colman, Bart., a vote of thanks was passed to the chairman for the vast amount of work he had undertaken in compiling this complete and useful publication. The book extends to eighty-one pages, it is interleaved, records the plants, the parentage of hybrids, awards, exhibitor and dates, and it marks concisely the progress of Orchid culture and the increasing favour of these interesting plants.

AWARDS OF MERIT.

Laelio-Cattleya Bicus Aircs (L.-c. blotchlegensis × C. Enid), from Dr. MIGUEL LACROZE, Bryndir, Roehampton Lane (gr. Mr. Cresswell). A beautiful Laelio-Cattleya, comparable with L.-c. St. Gothard, and, like it, preserving the true Cattleya-like form and substance. The broad sepals and petals are coloured light-rose, the well-rounded lip being purple in front, with a light margin, the tube being coloured like the petals, but veined with rose.

Cymbidium Alexandri aurum (insigne × chumco-Laurianum), from Messrs. J. AND A. McBEAN, Cooksbridge. The first variety of this cross, with a clear canary-yellow ground, the markings on the lip being bright-red. The flower, which was of good shape, had slight purple lines in the centre of the yellow petals.

Odontoglossum amabile McBean's variety (crispum fine-white form × crispum-Harryanum). A fine hybrid, much larger than any other previously shown. The sepals and petals are light yellow blotched with red brown, the tips and margins slightly tinged with rose colour. The lip is white, with dark blotches in front of the yellow crest.

CULTURAL COMMENDATION.

To Mr. FARNES, Orchid grower to Pantia Ralli, Esq., Ashted Park, Surrey, for a splendid specimen of Lycaste Balliae, with twenty-six flowers and buds.

OTHER EXHIBITS.

ELIZABETH LADY LAWRENCE, Burford, Dorking (Orchid grower Mr. E. Swinden), sent a fine spike of Eulophiella Peetersiana, with twelve fine rosy-mauve flowers and many buds.

MESSRS. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a group in which all the specimens were remarkable for their fine quality and high cultivation. The best noted were Odontioda Cooksonae and A. Lambennianum, each with several spikes of bright scarlet flowers; a fine selection of Odontoglossums, including O. Thwaitesiae (Rossii rubescens - Harryanum), of rich colour; O. eximium xanthotes, pure white with a few clear yellow spots, contrasting well with the large claret-blotched variety beside it; fine O. Jasper; a good white-petalled Cattleya Enid; and Odontonia Langworthy.

MESSRS. ARMSTRONG AND BROWN, Tunbridge Wells, were awarded a Silver Flora Medal for a group rich in good hybrids Cattleya Clotho var. Miss Louisa Fowler (Trianae × Enid) has a fine flower of good shape, the colour pale rosy-lilac, with a rich purplish-claret front to the lip. The colour is equally bright on the upper and the lower side. C. Clotho Orchidhurst variety, with a slightly smaller lip; C. Trianae alba, Broomhill variety, a large and clear white flower; several forms of the pretty Laelio-Cattleya Gwynnie, and L.-c. Myra, both yellow in colour; Cymbidium Castor, Orchidhurst variety (Woodhamsianum × insigne), a large cream-white flower with ruby spots on the lip; Miltonia St. Andre and other Miltonias; some finely coloured seedling Odontoglossums and Odontiodas.

MESSRS. J. CYPHER AND SONS, Cheltenham, staged a pretty group which was accorded a Silver Flora Medal. There were many fine

Cypripediums, whilst good specimens of Cymbidium Gottianum, C. Butterfly and others were arranged with well-flowered Dendrobiums, Calanthes, Miltonia St. Andre, Angraecum eburneum, Vanda Amesiana, Aërides Vandarum and other uncommon species.

MESSRS. SANDER AND SONS, St. Albans, were awarded a Silver Flora Medal for good Cymbidium of several crosses with Cattleya Trianae, one fine form of rich colour having twelve flowers; and other Cattleyas, Laelio-Cattleyas, Odontoglossums, Laelia Gouldiana and some singular and rare species.

MESSRS. J. AND A. McBEAN, Cooksbridge, had an effective group in which Cymbidiums were the chief feature. C. Alexandri displayed great variation in form and colour. Some fine forms of O. crispum, the richly coloured Odontioda Latona lilacina, and Sophro-Laelio-Cattleya Marathon were noted. (Silver Flora Medal.)

MESSRS. STUART LOW AND CO., Jarvisbrook, Sussex, secured a Silver Banksian Medal for a group with good white Cattleya Percivaliana alba, C.P. Little Gem, and other good Cattleyas, Sophro-Cattleya Thwaitesiae, with three fine red flowers, Laelio-Cattleya Pizarro, and finely finely flowered Masdevallias.

Mr. HARRY DIXON, Spencer Park, Wandsworth Common, staged a pretty group of Cymbidiums, two good forms of the white Brasso-Cattleya Digbyano-Mossiae Queen Alexandra, B.-C. heatonensis, Sophro-Cattleya Atreus, S.-C. Thwaitesiae, and good Cypripediums. (Silver Banksian Medal.)

MESSRS. HASSALL AND CO., Southgate, were awarded a Silver Banksian Medal for a group in which were noted bright Odontiodas, a fine Odontoglossum percultum, Brasso-Cattleya Nestor, Cattleya Trianae alba, and other Cattleyas.

Mr. C. F. WATERS, Balcombe, showed several good Odontoglossum crispum, one with eighteen large flowers on a spike, also forms of Lycaste Skinneri.

MESSRS. FLORY AND BLACK, Slough, showed a good seedling Odontoglossum, Brasso-Cattleya Digbyano-Mendelii, Cattleya Octave Doin, and the distinct Cypripedium Pliny.

Fruit and Vegetable Committee.

Present: Mr. P. C. M. Veitch (in the chair), Messrs. E. Beckett, A. Grubb, A. Bullock, E. A. Bunyard, W. H. Divers, J. Jaques, John Harrison, O. Thomas, H. S. Rivers, W. Poupart and A. R. Allan.

The MARQUIS OF RIPON, Coombe Court Gardens, Kingston Hill, showed a small but choice collection of Apples, for which a Bronze Knightian Medal was awarded. The varieties included: Ben's Red, Blenheim Pippin, Emperor Alexander, Bramley's Seedling, Bismarck, The Queen, Norfolk Beauty, Gascoyne's Scarlet, and Lane's Prince Albert, all excellent fruits of the respective varieties.

MESSRS. SUTTON AND SONS, Reading, showed excellent Cauliflowers of their Superb Early White variety. Each head was a model specimen, being compact, of good size and the curd very white.

ANNUAL MEETING.

The one hundred and twelfth annual general meeting of the Society was held at 3 p.m. The president, the Rt. Hon. Lord Grenfell, G.C.B., G.C.M.G., took the chair, and there was a fair attendance of Fellows. The secretary read the notice convening the meeting, and the minutes of the last annual meeting were read and confirmed. Eighty new Fellows were elected. The president moved the adoption of the Council's report, and touched on the main facts contained in it. He said that the outbreak of war found the Society pledged to an extensive programme of development. This programme it was impossible to revoke. The building of the laboratory at Wisley had been put in hand, and a scheme of work prepared which involved an additional expenditure of £3,000 per annum. Against this and other increased expenditure, there was a decrease in income caused by resignations, depreciation in stocks held by the Society, and other losses of like nature. The president appealed to the Fellows to stand loyally by the Society at this difficult time, and to do their best, by introducing new Fellows, and in every other possible way, to enable the Society

to continue and extend its activities. He referred to the remarkable response to the call for men to serve in the Army, which had been made by the employees in all departments of the Society, and to his successful efforts to provide bulbs for planting in the convalescent camps at Etaples and other places in France. The president referred to the establishment of a Degree in Horticulture by the Senate of the University of London, linked up with the National Diploma already conferred by the R.H.S. He stated that most of the ordinary activities of the Society were being pursued much as usual, but Fellows must remember that in the specially difficult circumstances in which the Society now found itself, it was always possible that these, or any part of them, might be interrupted. It was with difficulty that the hall itself had been rescued from the fate of being turned into a soldiers' restaurant. The president impressed upon the Fellows the necessity of tending and keeping up their gardens so far as possible, as any neglect in this direction would tend to cause loss and hardship to the seed and nursery trade. The need for planting as many food-crops as possible was paramount, and could not be reiterated too often. In conclusion, he referred to the fund being raised by the Society for the restoration of horticulture in the countries of our Allies after the end of the war.

The motion was seconded by the treasurer, Mr. J. Gurney Fowler, who, at the same time, gave the statement of accounts for the year 1915. He regretted to have to report, for the first time, a reduction instead of an increase in the year's balance. The increased expenditure in connection with the Wisley Gardens amounted to £882. A loss of £2,000 in takings at the shows had been responsible for a large part of the reduction, this being partly accounted for by the fact that the first day of the Chelsea Show in May was hopelessly wet. The total reduction of revenue was over £5,000; but a saving had been effected by means of various economies of about £1,500, against which had to be set the extra expenditure at Wisley. It was to be regretted that the Education Authorities this year had refused, on grounds of economy, to grant the usual £250 towards the expenses of the educational work of the Society. It was felt by the Council that, in view of the very valuable nature of the work being done, the withdrawal of the grant was a hardship. The position at Wisley at the beginning of the war pledged the Society to a heavy expenditure. Nearly £10,000 had already been spent there, including a deposit of £1,260 lodged with the water company for a water-main, which had been laid down from Ripley to Wisley. It had been a bad time for realising investments, but this had had to be done in some cases, and naturally the loss was considerable. Some of the investments had been written down before the war, but there had been considerable depreciation since. In July, 1914, the investments had stood at £78,000 odd, valued at £71,000. This year they stood in the books at £72,000, and their value on December 31 was reckoned at £63,000.

The Report and Statement of Accounts were unanimously adopted. At this stage of the proceedings Lord Grenfell vacated the chair, as he had to attend a War Committee, and his place was taken by Sir Harry Veitch.

Mr. H. J. ELVES made the suggestion that the Council should arrange for a sale of plants, particularly interesting or valuable plants, contributed by Fellows for the benefit of the Red Cross Society. He would suggest that a stand for this purpose might be taken at the Chelsea Show.

The motion was seconded by Mr. Gerald Loder. Mr. R. W. WALLACE thought it would be much better to have the sale in the R.H.S. Hall than at Chelsea. With reference to the depreciation in investments, he thought this was much less than might have been feared, and wished to congratulate the Council on their wise choice of investments. On the subject of awards to traders, under the heading of "Economy," on p. 3 of the Council's Report, he thought it would be better to put all exhibitors on the same footing, and eliminate all actual cups, giving only the card indicating the award made. He would like to

ask the treasurer whether the £100 donation towards Mr. Farrer's expenses was the last that would be made? With reference to the names of enemy aliens which still appeared in the List of Fellows, was it not the duty of the Council, since these Fellows could not have paid their subscriptions for the year, to take their names from the list? Referring to paragraph 28 of the Report (Committee's) he thought it a pity that the matter should have been emphasised, and that stress should be laid on the fact that all awards of the committees were subject to ratification by the Council. At the same time he thanked the Council for the hard work performed by them during the year, and hoped that next year their efforts would be rewarded by their not having again to face a deficit.

Sir ALBERT ROLLIT, LL.D., D.C.L., said that he was very glad the matter of the Degree had been successfully brought through, as he had worked for a long time to get the University of London to establish it. He had to thank Dr. Keeble, Mr. F. Chittenden, Mr. S. T. Wright, the secretary (the Rev. Wilks), the members of the Council, and others for the great assistance they had rendered him in the matter, without which his task would have been infinitely more difficult. The great advantage conferred by the degree was that it could not be obtained by anyone with merely theoretical knowledge. The taking of the degree was conditional on the candidate passing the first part of the National Diploma examination, which includes a severe practical test. The establishment of the degree opens to every practical gardener the possibility of acquiring an advanced knowledge of horticulture, which must be of the greatest possible value, not only to himself personally, but also to the whole community.

The Rev. J. JACOB referred in terms of appreciation to the action of the Council in arranging the show of Home-grown Bulbs, which was to take place in August, and said that the more the bulb-growing industry was popularised, the more it would be appreciated. He suggested that the show be made the occasion for a lunch to the exhibitors, judges, and members of the Press, and that some well-known authority be asked to preside.

A Fellow drew attention to the necessity for keeping the scientific side of the Society's work well to the fore, and especially of maintaining the library. He was surprised that the Library Committee had not met for a considerable period.

Sir HARRY VEITCH replied, in the name of the Council, to the various speeches, and thanked the Fellows for their kind appreciations of the services rendered by the Council, and also for the valuable suggestions they had made, which would be given serious and sympathetic consideration. He feared it would be impossible to hold the sale suggested by Mr. Elwes at Chelsea, as all the available ground would be fully occupied, and there would also be difficulties of transport to contend with. It would be better if the sale were held at the Hall. To Mr. Wallace he replied that the £100 paid towards Mr. Farrer's expenses was the last amount to be paid. The Council had no power to remove any names from the list of Fellows, except at a specially summoned general meeting; in case of non-payment of subscriptions, a defaulting Fellow was unable to avail himself of any of the privileges provided by the Society, but remained, nevertheless, a Fellow. Moreover, unpaid subscriptions could be recovered at law.

The president, members of Council, officers, and auditors were all re-elected.

Mr. GEO. PAUL moved a resolution of thanks to the Chairman and Council. He spoke of the good offices rendered by the Society to the trading community. His motion was seconded by Mr. Gerald Loder, who said that the Council were to be congratulated on having steered the Society safely through the troublous times of the past year. The wonder was that the Society had not lost more members than it had, and its present comparatively favourable position spoke volumes for its popularity and the efficiency of its administration. Some criticisms had been offered, but they were all of a friendly nature, and several useful suggestions had been made, which the Council had received in a very kindly spirit. He wished now, on Mr.

Elwes's behalf, to draw attention to the omission from the proposed expenditure for the coming year of the sum of £250, which had previously been promised by the Council, towards the revision of Pritzel's *Iconum botanicarum Index*. He knew the Council had had to meet heavy expenses on a seriously diminished income, but he had hoped that the sum would be earmarked as decided upon. He trusted that the Council would push forward the work at the earliest practicable moment, and that it would be completed as soon as possible. Anyone who had seen the worn and thumbled copy of the written-up "Pritzel" at Kew would no longer doubt its immense value and utility. He also made the suggestion that the bye-laws of the Society be printed in the year-book for reference.

The treasurer replied to that part of Mr. Loder's remarks which referred to the revision of Pritzel's Index, that he himself regretted the forced omission from the budget of the £250 for this useful purpose, but at present there seemed very little possibility of getting on with the work. As soon as circumstances were favourable the work would be put in hand, and any deficit be made up.

NATIONAL ROSE.

ADJOURNED ANNUAL MEETING.

FEBRUARY 8.—This meeting was held at the Westminster Palace Hotel on Tuesday last. Mr. Edward Mawley, V.M.H., presided. Mr. E. J. Holland, deputy president, and the new treasurer of the Society made a statement as to the accounts for the past year, which were adopted. The Society had been passing through a difficult time, but after all liabilities had been discharged, they could begin a new year with a balance in hand of about £175, in addition to their reserve fund of a little over £2,500 2½ per cent. Consols, worth to-day about £1,500. He mentioned that, contrary to expectation, the amount received in subscriptions rather exceeded that of the previous year, though the members were slightly fewer. The meeting voted to the secretary, Mr. Courtney Page, an honorarium of £100 as an acknowledgment of the work he had done for the Society. A vote of thanks to Mr. Preston Hillary (hon. solicitor) was passed.

Mr. DARLINGTON made a statement as to the work contemplated by the Publications Committee for the coming year. In addition to the *Rose Annual*, which would appear shortly, they proposed to take up the preparation of a new edition of the Catalogue, which, but for the war, would have probably appeared last autumn. The first question the committee would be asked to consider was the possibility of combining the Catalogue with the Pruning-book, which, if practicable, might save some expense to the Society in postage, and prove more convenient to the members. A few years ago the question of a new classification of Roses, from the point of view of their usefulness for exhibition and in the garden, had been discussed at some length in the *Rose Annual*, and the committee would be asked to consider the practicability of adopting some such scheme, side by side with the present botanical classification. Looking further ahead, he hoped that at no distant date the Society would be able to place in the hands of its members a complete list of the names of all Roses that had been issued, with short particulars of them. Such a list had been prepared by Simon and Cochet ten years ago (1906), and was very useful, but he doubted whether it was well known in this country. He thought that if it were brought down to the present time, and issued to the members, they would appreciate it. He had the material ready when the Council thought fit to publish it. Mr. MAWLEY agreed, and said he had made a proposal of a similar nature. Mr. EASLEY suggested that in the future it would be convenient if the *Rose Annual* could appear at the beginning of the year. Mr. DARLINGTON agreed, and thought that if the articles could be obtained in the course of the summer the work of obtaining suitable illustrations would be easier. He added that probably many ideas for the improvement of the Society's publications might occur to members of the Society whilst engaged in work among their Roses, and if those members would communicate them to him he

would appreciate it, and would see the communications received the consideration of the Publications Committee. The proceedings closed with a vote of thanks to Mr. Mawley.

NATIONAL CHRYSANTHEMUM.

FEBRUARY 7.—The annual general meeting of the above Society was held at Carr's Restaurant, Strand, London, on the 7th inst. The chairman, Mr. Thomas Bevan, presided over an attendance of twenty-eight members. A letter from the president, Sir Albert Rollit, was read, in which he regretted his inability to be present, and again generously offered to present a cup for competition. The report was taken as read. The following are some extracts from it.

Extracts from the Report.

The Committee made arrangements for the holding of a Show at the Royal Horticultural Hall on Thursday and Friday, November 11 and 12. Having regard to the limitations of space as compared with the Crystal Palace, and the limitations of finance in consequence of the war, it was necessary to draft an entirely new Schedule. The result of the Show proved conclusively that the Schedule Committee were very successful in adapting the list of classes to the particular needs of a war-time Show. The hall was comfortably filled with exhibits, and the standard of quality in the main classes was quite equal to the best that has ever been staged in normal times. The competition in the classes for large Japanese blooms was keener than it had been for several years past, and this in spite of the enforced reduction in the amount of prize money. Whilst the Committee are hoping to be able again to increase the prizes at the conclusion of the war, they are pleased at being able to point to the last Show as evidence that exhibition blooms are grown by Chrysanthemum enthusiasts not simply from the pecuniary point of view but largely, and in many cases entirely, from love of the flower itself.

Seven meetings of the Floral Committee were held, and 102 varieties were staged (including six which had been before the Committee on previous occasions), as compared with 103 during 1914 season and 177 during 1913 season. Of the 102 varieties which were staged, 25 were awarded First-Class Certificates and 11 were Commended. The usual table is appended showing to which sections First-Class Certificates have been awarded during the past five years:—

	1911.	1912.	1913.	1914.	1915.
Japanese	8	27	15	9	12
Incurved Japanese ..	2	2	2	3	—
Incurved	2	3	—	—	—
Single	21	16	13	7	12
Decorative	7	—	—	—	—
Anemone Centred Single ..	—	—	—	—	1
Total	38	48	30	19	25

During the season a Subcommittee considered the following special matters, viz:—

1. Possible improvements in nomenclature.
2. The classification of varieties which are especially good for spray blooms as distinct from those varieties which reach perfection in a unibudded form.
3. The recognition of new types of Chrysanthemums.
4. Extended classification of Anemones.

The Subcommittee presented an interim report on these matters, but it was deemed advisable to delay any final action until the termination of the war.

On October 4, Mr. C. Harman Payne, hon. Foreign Corresponding Secretary of the Society, delivered a lecture entitled "A Chat about the Golden Flower: its poetical, mythical, and romantic associations." By reason of the lighting regulations, the Committee were reluctantly compelled to postpone the lectures by Dr. Koebke on "The Scientific Aspects of Plant Breeding: with special reference to Chrysanthemums," and by Mr. Oragg on "How to Raise Seedling Chrysanthemums," which had been arranged for November 3 and December 8 respectively. Arrangements have now been made for these lectures to be delivered during the coming spring on March 20 and April 17.

The general receipts of the Society have suffered, in company with all similar societies, as a direct result of the war. This position was, however, fully anticipated at the beginning of the year by the Finance Committee, and the expenditure was adjusted to fit the reduced income. The result is that the Committee have paid all their obligations, and have concluded the year with a balance at the bank of £28 0s. 3d.

Meetings of the Floral Committee for 1916 will be held at the Royal Horticultural Hall (Committee Room No. 1) on the undermentioned dates: Monday, September 25; Monday, October 9; Monday, October 23; Monday, October 30; Thursday, November 9; Monday, November 20; Monday, December 4.

Arrangements have already been made to hold an exhibition at the Royal Horticultural Hall on November 9 and 10, 1916. The Schedule of Classes will be issued to the members as soon as possible.

THOS. BEVAN, Chairman.
E. F. HAWES, Vice Chairman

RICHARD A. WITTY, Secretary.
January 17, 1916.

PROCEEDINGS.

The balance sheet showed a surplus of over £124, and the cash balance had risen during the year from £13 to £23, not including a sum of £75 on deposit. The chairman proposed the adoption of the report and statement of ac-

counts, which was carried unanimously, and the thanks of the meeting were conveyed to the honorary auditors for their valuable services. The following officers were then elected:—

President, Sir Albert K. Rollit, LL.D., D.C.L.; treasurer, Mr. John Green; chairman, Mr. Thomas Bevan; vice-chairman, Mr. E. F. Hawes; foreign corresponding secretary, Mr. C. Harman Payne; general secretary, Mr. Richard A. Witty.

Executive Committee.—Messrs. A. M. Falkner, W. Howe, R. B. Leech, J. B. Linford, J. Rogers, P. Highatt, F. W. Ladds, E. F. Such, T. Smith, J. T. Simpson, Keith Luxford, A. C. Bartlett, J. H. Jarrett and Harold Wells.

In view of the abnormal circumstances arising out of the war it was decided to suspend Rule V. for the present year. Rule XVII. was altered by the deletion of the provision that no auditor should hold office for more than two consecutive years.

ROYAL GARDENERS' ORPHAN FUND.

FEBRUARY 4.—The annual general meeting of the subscribers to the Royal Gardeners' Orphan Fund took place at Simpson's, Strand, on the 4th inst. Mr. H. B. May, chairman of the Executive Committee, presided. Mr. Brian Wynne, secretary, read the notice calling the meeting, and the minutes. The report of the committee for 1915 was introduced by the chairman. It read as follows:—

Report of Executive Committee.

The Committee keenly regrets that owing to the war and the stress of the economic conditions arising therefrom the contributions derived from the annual subscriptions of friends of the Fund have diminished to a considerable extent. In spite of all difficulties, however, the Committee would point out that the Fund is still in a healthy condition, thanks in a great measure to the special appeal referred to in another paragraph, and fervently hopes that when the country assumes a more normal condition the great benefits which have been conferred in the past on fatherless children will be considerably increased.

The number of children receiving the full benefits of the Fund at the commencement of the year was 127, and to this number 16, all of whom had been in receipt of small allowances while waiting for election, were added at the annual meeting. The amount disbursed in allowances during the year was £262 11s. 6d., less than in the previous year, owing to a few of the children on the roll retiring for various reasons before they attained the age limit. The total amount distributed since the Fund was established is £32,083.

Taking the exigencies of the times into consideration, and the possibility of greater difficulties being

experienced in raising the income required, the Committee does not consider it advisable to recommend the election of more than 16 candidates at the ensuing annual meeting, and in order to save expense to the friends of the candidates in canvassing for votes recommends that the election should take place by show of hands, instead of by taking a poll, an arrangement which it feels sure will be approved by all well-wishers of the Fund.

Owing to its inability to hold the usual annual festival—such a fertile source of income in the past—the Committee had early in the year to face the prospect of a heavy deficit. It is now, however, most thankful to be able to record the gratifying fact that a special appeal for help made by the treasurer, Mr. Edward Sherwood, realised the handsome sum of £794 10s. 8d., which most materially eased the situation. Included in this total are a most generous donation of £100 from Mr. N. N. Sherwood, J.P., and his sons; about £25 received anonymously; and most helpful contributions from Messrs. Sutton and Sons, Mr. Jesse F. Smith, Messrs. George Bunyard and Co., Ltd., the Dulwich Chrysanthemum and Horticultural Society, the Bradford and District Chrysanthemum Society, the Spens Valley Paxton Society, and many others, to all of whom most grateful thanks are hereby tendered.

The Committee most gratefully acknowledges its deep indebtedness to Mr. Joseph Rochford for the very generous gift of £300 4½ per cent. War Stock, which will provide for the maintenance of one child in the future, and has saved the Fund from having to show a serious deficiency in the year's receipts.

The Fund is again greatly indebted to Sir Frank Crisp, Bt., for a valuable contribution; to the local secretaries for much valued assistance, cheerfully given under very trying circumstances; and to the secretaries of several Gardeners' Improvement Societies for kindly bringing the claims of the Fund to the notice of their members, and making collections of small sums at their meetings. Such collections in the aggregate prove most helpful to the Fund, and the Committee would gladly welcome a contribution, however small, from all such societies.

Your Committee has again to deplore serious losses by the deaths of a number of old and valued supporters of the Fund, amongst whom must be named with much regret its friend and colleague for 20 years, Mr. John Lane, late gardener at Foxbury, Chislehurst, in which district, as the honorary local secretary, he was the means of raising considerable amounts for the Fund, and lost no opportunity of pleading the cause of unfortunate children among his brother gardeners. To the late Mr. David W. Thomson, of Edinburgh, the Fund was greatly indebted for many years of devoted labour on behalf of the orphans, and was himself a generous supporter of the Fund. From the inception of the charity the late Lord Rothschild was ever a most liberal benefactor, and others whose constant and very helpful contributions will be greatly missed are Mr. J. C. Eno, Mr. Robert Fox, Mr. George Beckwith, Mr. W. T. Holland, Mr. A. W. Pollard, Mr. F. Lowenader, Mr. W. H. Crawford, Sir Thomas Jackson, Bt., Mr. J. R. Jackson, and Mr. J. T. Taylor.

The members of the Committee who retire by rotation at this meeting are Mr. A. R. Allan, Mr. W. H. Cuthbush, Mr. D. Ingamells, Mr. R. B. Leech, Mr. J. F. McLeod, Mr. A. W. Metcalfe, Mr. R. Hooper

CASH STATEMENT FOR THE YEAR ENDING DECEMBER 31, 1915.

RECEIPTS.		EXPENDITURE.	
	£ s. d.		£ s. d.
To Subscriptions: General ..	195 3 8	By Allowances to Orphans ..	1,626 7 6
Local Secretaries ..	60 15 4	.. Grants in Aid ..	140 3 6
	255 19 0	.. " Emma Sherwood Memorial " ..	13 0 0
Donations: General ..	143 9 1	.. " Maybud Campbell Grant " ..	13 0 0
Local Secretaries ..	14 13 0	.. " James Campbell Grant " ..	13 0 0
	158 2 1		1,805 11 0
Response to Special Appeal ..	794 10 8	Secretary's Salary ..	200 0 0
Advertisements in List of Subscribers ..	20 19 0	Printing and Posting List of Subscribers ..	41 14 6
Dividends on Stock ..	402 11 9	.. Rent, Insurance, Firing, and Lighting, etc. ..	47 6 0
Income Tax returned ..	18 15 8	.. Printing and Stationery ..	36 17 8
Loan from Bankers ..	300 0 0	.. Advertising ..	2 14 0
	1,950 18 2	.. Annual General and Committee Meetings ..	23 4 0
Balance last Account ..	629 7 11	.. Postages ..	52 4 5
	£2,580 6 1	.. Bank Charges ..	6 11 9
Gift of 4½ per cent. War Stock by Joseph Rochford, Esq., £300.	—	.. Petty Cash: Sundries ..	1 0 4
	—		169 18 2
	2,217 3 8		363 2 5
Notes: Investments:			
3 per cent. London and County Council dated Stock ..	£7,240 15 10		
3 per cent. Canada Stock ..	2,000 0 0		
L. and N.W. Railway 4 per cent. Preference Stock ..	340 0 0		
Great Indian Peninsula Railway Guaranteed 5 per cent. Stock ..	514 0 0		
Metropolitan Railway 3½ per cent. First Debenture Stock ..	570 0 0		
4½ per cent. War Stock, Transferred from Consols ..	£726 8 10		
Gift by Joseph Rochford, Esq. ..	300 0 0		
	—		1,026 8 10
" Thomson Memorial Trust " ..	—		
East Indian Railway B. Annuity of £14, 10s. ..	430 11 0		
" Emma Sherwood Memorial " ..	—		
Metropolitan Water (By) 5 per cent. Stock ..	516 15 11		
" Maybud Campbell Grant " ..	—		
Metropolitan Railway 3½ per cent. Preference Stock ..	391 0 0		
	—		£2,580 6 1

Having inspected the Securities and examined the Books and Vouchers supplied to us, we hereby certify the above account to be correct.

January 19, 1916.

PETER R. BARR, Auditors.
FRANK READER, Auditors.

Pearson, and Mr. Jesse F. Smith, all of whom, being eligible, offer themselves for re-election. For the seat left vacant by the death of Mr. John Lyne, the Committee has great pleasure in recommending the election of Mr. C. R. King, Kingscot, Sheen Park, Richmond, S.W., an old friend of the Fund.

To the auditors, Mr. Peter R. Barr and Mr. Frank Reader, the thanks of the Committee are again due, and are hereby heartily accorded, for their careful checking of the accounts. The services of Mr. Reader, the retiring auditor, being so highly appreciated, the Committee has pleasure in nominating him for re-election.

PROCEEDINGS.

The chairman said that the past year had been a time of great anxiety for all interested in the Fund, for it was feared that there would be a considerable falling off in income. How much, even the committee could not tell. Now that the balance-sheet was issued there were ample reasons for satisfaction that the loss was comparatively small. Taking fully into consideration the difficult conditions at present prevailing, the committee was anxious on the present occasion not to cause the friends of candidates the expenses inseparable from an election, and had therefore come to the decision to recommend the subscribers at that meeting to elect sixteen candidates by resolution. The list was compiled by including the six unsuccessful candidates at the previous election, one each where two members of a family have been nominated, and two single nominations. The loss resulting from the abandonment of the Festival dinner had been largely compensated by a vigorous public appeal, for which the committee was in a special sense indebted to the treasurer, Mr. Edward Sherwood. To Mr. Joseph Rochford, who had contributed a sum of £300 in War Stock, to Sir Frank Crisp, Bt., and others, whose gifts were so greatly appreciated, cordial thanks were offered. After referring to the great loss the committee had sustained in the death of Mr. John Lyne, the chairman proposed that the Report be accepted. The resolution was seconded by Mr. W. Poupart, and carried *nem. con.*

Mr. Bates then proposed that Mr. Edward Sherwood be reappointed treasurer, and thanked for his services. Sir Harry Veitch seconded, and the motion was carried. Mr. Honour Pearson proposed that Mr. Frank Reader be re-elected auditor, Mr. Moorman that Mr. C. R. King be elected a member of the committee, in place of the late Mr. Lyne, and the chairman that Mr. Brian Wynne be re-elected secretary at a salary of £200. All these resolutions were passed with unanimity.

Sir Harry J. Veitch then proposed that the following sixteen candidates be hereby and are now elected pensioners:—Joseph John Allen, Cecil Thomas Gunstone, Louise Margaret Gunstone, Charles Waugh New, Grace Mary Plummer, Reginald Dreury Shoesmith, Edith Jane Betts, Dorothy Mabel Biggs, Herbert Henry Blay, Dorothy Tennant Brown, Gladys Mary Dew, Eric F. M. Harvey, Ethel Ruby Knibb, Mary F. Paterson, Eric John Saddington, and Annie McLean Troup. Sir Harry said he was greatly delighted that the committee had taken the step they had at the present time. The longer he lived the more he was convinced of the amount of good achieved by the Orphan Fund and similar institutions. He could wish that it were possible to achieve more, but those interested in the work did all they could, and the results were certainly gratifying. The resolution was adopted with acclamation.

PERPETUAL-FLOWERING CARNATION

The following new varieties of Perpetual-flowering Carnations have been recently registered by the Perpetual-flowering Carnation Society. We append the names with the descriptions supplied by the society's secretary:—

The Major, Indian chestnut, seedling; Red Cheney, brick-red sport from Mrs. B. P. Cheney; Niobe, clear salmon-pink, seedling; White May Day, white sport from May Day; these four by Messrs. ALLWOOD BROTHERS, Haywards Heath. Mrs. Lucy McKinnon, scarlet seedling; Messrs. WM. CUTBUSH AND SON, Highgate. Mrs. Duncan Macpherson, bright rose seedling; Mr. H. G. CULLWICK, Westlake Gar-

dens, West Coker, Yeovil. Capt. Duncan Macpherson, bright cerise seedling; Mr. H. G. CULLWICK, St. Margaret, dark pink sport from R. F. Felton, Nikko, cerise sport from Mikado; Ozarina, lilac seedling; these three by Mr. H. BURNETT, Guernsey. Mrs. W. Cursham, salmon-pink seedling; Mr. H. WOODMAN, Shirley, near Birmingham. Bedford Belle, salmon-pink; Messrs. LAXTON BROTHERS, Bedford. Saffron, clear yellow sport from Sunstar; Mr. C. ENGELMANN, Saffron Walden. Gunner, purple-maroon, seedling; The Countess of DERBY, Cowarth Park, Sunningdale. Red Sensation, deep rosy-red sport from Pink Sensation; Mrs. T. A. Weston, apricot with red stripes, seedling; Lord Kitchener, clear salmon seedling; these three by Messrs. W. WELLS AND CO. Malcolm, cherry-red, seedling; PRUE AND FYFE, Birchgrove, East Grinstead.

CORNWALL DAFFODIL.

JANUARY 29. The committee of the Cornwall Daffodil and Spring Flow Society met at Turo on this date, the Rev. A. T. Boscawen presiding. Reference was made to the death of the secretary, the Hon. John Boscawen, it being pointed out that the Society owed its existence to the de-



THE LATE H. W. WARD

ceased, and its success was due in a large measure to his untiring energy.

It was recorded that many members of the Society had died during the year, Miss Paull remarking that she could not remember a similar period in which the loss had been so heavy.

It was unanimously decided not to hold a show during the continuance of the war.

Mr. A. P. Nix consented to hold the office of secretary temporarily.

Mr. Blenkinsop, the treasurer, reported a balance in hand on current account of £4 17s. There was £110 on deposit, with £4 2s. 6d. accumulated interest, making a total of £118 19s. 6d. in favour of the Society.

LEWISHAM HORTICULTURAL.

JANUARY 17.—A sum of five guineas was voted at the annual meeting of the Lewisham and District Horticultural Society's annual meeting on the 17th ult. to the Royal Horticultural Society's Fund to provide seeds for allied countries when hostilities cease. Although last year's show was abandoned, the report of the society showed that it is in a flourishing condition and had a cash balance of £152.

The membership still continues to increase, it being now 560. The allotments this year have shown good results both in quality and

produce. A small piece of ground has been rented in Hither Green-lane, consisting of ten five-rod plots, which is now in progress of cultivation. The committee are also in negotiation for six acres of land at Forest Hill, which will make about 160 ten-rod plots. They have been obtained at the low rent of 10s. per acre.

Mr. H. J. Jones was re-elected president. Mr. W. T. Kinnear, hon. treasurer; and Mr. Albert Pratt, hon. secretary.

ROSSENDALE (BACUP) HORTICULTURAL.

JANUARY 18.—The annual meeting of the above society was held on the date given at the Rawtenstall Liberal Club. There was a good attendance, presided over by Mr. W. Eastwood. The accounts showed a credit balance of £16 18s. 1d., and the secretary reported that the year had been a successful one, in spite of the difficulties attendant on carrying on the society in war time. A flower and plant sale held in the autumn was a great success, and realised a sum of over £21, which was given to the local hospitals. The president, Mr. Hal Maden, and the secretary and treasurer were re-elected for the year.

Obituary.

CANON ELLACOMBE.—The announcement of the death of Canon Ellacombe will be received with deep regret by all gardeners. The Rev. Henry Nicholson Ellacombe, Hon. Canon and Vicar of Bitton, Gloucestershire, had been in poor health for some time. Early in the present year his state became grave, and he passed away on Monday, February 7, at the age of 94. The funeral took place at Bitton on Thursday, the 9th inst. Canon Ellacombe's fame as a gardener was world-wide, and no gardener was so loved by nor was more deserving of the love of his brothers of the craft. He was as happy in describing his garden as in the cultivation of the plants, and successive generations of our readers have enjoyed his delightful writings on garden subjects. An account of the work of Canon Ellacombe will be published in our next issue.

H. W. WARD.—We greatly regret to record the death of Mr. H. W. Ward, late head gardener to the Earl of Radnor, Longford Castle, Salisbury, and for some years past a market cultivator on his own account at Rayleigh, Essex. During his service at Longford Mr. Ward was generally recognised as one of the foremost British gardeners, and he was particularly successful in the cultivation of indoor and hardy fruits. For nearly forty years deceased contributed cultural notes to these columns on all matters pertaining to fruit and vegetable cultivation, his last contribution arriving at this office only a few days ago. He was a prodigious writer, and his contributions were often specially valuable in that they showed a wide knowledge and appreciation of the multitudinous matters concerned with the management of large private gardens and country estates. In addition to writing for the weekly Press Ward found time to publish several books on Vine and Peach cultivation, and one entitled "My Gardener," written more particularly for amateur gardeners. The funeral will be at twelve o'clock to-day (Saturday) at Rayleigh Church.

JOHN MOODY.—There passed away at Winnipeg, Canada, on December 23 last, a link with the past generation of fruit growers in the person of the late Mr. John Moody, aged 76 years. Deceased spent the early part of his career in the famous nurseries of Messrs. Osborn, of Fulham, and Mr. Chas. Turner, at Slough. His vigorous personality attracted the attention of the late Mr. Stuart Low, who engaged him, about 1879, to assist in forming the new fruit-tree nurseries of his firm, then known as Hugh Low and Co., at Bush Hill Park, Enfield, and his methods acquired from the "Osborn of Fulham School" have been transmitted to many a young man now engaged in different parts of the world in fruit growing. He retired from the service of Messrs. Low some years ago, and proceeded to Canada.

MARKETS.

COVENT GARDEN, February 9.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Azalea, white, per doz. bun.	3.0-3.6	Orchids, Cypripedium ..	2.0-3.6
Camellias, white, per doz.	1.6-1.9	— Odontoglossum crispum	4.0-5.0
Carnations, per doz. blooms, best American varieties ..	1.3-2.0	Pelargonium, per doz. bunches, double scarlet	4.0-6.0
— smaller, per doz. bunches	—	Richardias (Arums), per doz.	3.6-4.0
— Carola (crimson), extra large ..	3.0-3.6	Roses, per dozen blooms—	—
— Malmaison, per dozen blooms	—	— Duchess of Wellington ..	—
— pink ..	10.0-15.0	— Lady Hillingdon ..	—
Daffodils, per doz. bunches	—	— Liberty ..	5.0-8.0
— Golden Spur ..	4.6-5.6	— Madame A. Chateau ..	—
— Henry Irving ..	2.6-3.0	— Melody ..	—
— Princess ..	4.0	— Mrs. Russell ..	—
— Victoria ..	5.0-6.0	— My Maryland ..	—
— Emperor ..	5.0-6.0	— Niphetos ..	3.0-3.6
Eucharis, per doz.	2.0-2.6	— Prince de Bulgarie ..	—
Freesia, white, per doz. bun.	1.6-2.0	— Richmond ..	5.0-6.0
Gardenias, per box of 15 and 18 blooms ..	6.0-7.0	— Sunburst ..	6.0-8.0
Hyacinth, Roman, per doz. spikes ..	0.6-5.0	— White Crawford ..	—
Lapageria, per doz. blooms ..	—	Snowdrop, per doz. bun.	1.6-2.6
Lilac, white, per doz. sprays ..	4.0-5.0	— Spiraea, white, per doz. bun.	—
Lilium longiflorum, per doz. long ..	3.6-4.0	— Stock, double white, per doz. bunches	—
— short ..	3.6	— Tuberoses, per packet, 24 blooms ..	—
— lancifolium album, long ..	2.0-2.6	Tulip, Darwin's mauve, per doz. blooms ..	1.9-2.0
— short ..	2.0-2.6	— Tulips, single, white, per doz. bunches	5.0-7.0
— lancifolium rubrum, per doz. long ..	1.6-2.0	— coloured, per doz. bun.	6.0-10.0
— short ..	1.6	— double orange, per doz. bun.	12.0-15.0
Lily-of-the-Valley, per dozen bunches:	—	— red, per doz. bun.	12.0-15.0
— extra special ..	24.0	— pink, per doz. bun.	12.0-15.0
— special ..	15.0-18.0	Violets, per doz. bunches ..	1.6-2.0
— ordinary ..	—	— double, Marie Louise, per doz. bun.	4.0-6.0
Narcissus, Ornatus, per doz. bunches ..	2.6-3.6	— Princess of Wales ..	2.6-4.0
Orchids, per doz.: — Cattleya ..	12.0-15.0	White Heather, per doz. bun.	1.0

French and Guernsey Flowers.

	s.d. s.d.		s.d. s.d.
Anemone, double pink, per doz. bun.	1.0-1.6	Ranunculus, red, per doz. bun.	8.0-9.0
— de Caen, mix., per doz. bun.	4.0-5.0	— Barbary, per doz. bun.	3.0-4.0
— mauve, per doz. bun.	2.6-3.0	— carmine, per doz. bun.	3.0-4.0
Marguerites, yellow, per doz. bunches	1.6-2.0	Safrano, Roses, per packet, 24's ..	—
Mimosa (Acacia), per pad ..	4.0-5.0	Stock, white, per pad ..	4.6-5.6
Narcissus, Grand Primo, per doz. bun.	2.0-2.6	Violets, Parma, large bun., each ..	2.0-2.6
— paper white, per pad ..	6.0-8.0	— single, per pad, 48-60's ..	—
— Soleil d'Or (Guernsey), per doz. bun.	1.0-1.6	— per doz. ..	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches ..	7.0-8.0	Fern, French, per doz. bunches	0.6-0.8
Agrostis (Fairy Grass), per doz. bunches	2.0-4.0	— common ..	4.0-5.0
Asparagus plumosus, long trails, per half dozen ..	1.6-2.0	Galax leaves, green, per doz. bunches	—
— medium, doz. bunches	12.0-18.0	Hardy foliage, various, per doz. bun.	4.0-8.0
— Sprengeri ..	8.0-12.0	Honesty, per doz. bunches	10.0-12.0
Berberis, per doz. bun.	4.0-5.0	Lichen Moss, per doz. boxes ..	15.0-18.0
Carnation foliage, doz. bunches	4.0-5.0	Moss, gross bunches ..	7.0-8.0
Croton foliage, doz. bunches	12.0-15.0	Myrtle, doz. bun. English ..	6.0
Cycas leaves, per doz. ..	5.0-12.0	— small-leaved ..	—
Eulalia japonica, per bunch ..	—	— French, per doz. bunches	1.0-1.3
		Smilax, per bun. of 6 trails ..	1.3-1.6

REMARKS. Supplies of Lilium longiflorum are limited, and the best blooms are sold out long before the close of the market; a shortage of other Liliums will probably cause a further advance in prices. There is a fairly good supply of Richardias (Arums). Supplies of Lily of the Valley are more regular, and prices are a trifle easier. Red Roses, Richmond and Liberty, are arriving in excellent condition, as are also a few blooms of Sunburst, which are soon all sold. The best Daffodils are less plentiful, but there is a good supply of medium quality blooms arriving from the Channel Islands and Cornwall. Narcissus Ornatus (Pleasant Eye) is sufficient for the demand. There is an abundant supply of Tulips, both double and single. The blooms are the finest offered this season, and prices are moderate. Mauve Darwin Tulips are selling more freely, but the supply is limited. Large consignments are being received from Guernsey and Sicily on three days a week, but these chiefly consist of Yellow Narcissus Soleil d'Or, Grand Primo, and Paper White. Daffodils Golden Spur, Henry Irving, principles, and ovalarins, White Freesia, and Anemone fulgens. Daily arrivals are still being received from France, but White Narcissus appear to be almost over. White Stocks are arriving in excellent condition.

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Fruit: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Apples—		Dates, per doz. boxes ..	4.6-5.0
— Albemarle, per barrel ..	38.0-42.0	Grape Fruit, per case ..	18.0-20.0
— Californian, per box ..	7.0-8.6	Grapes, English, black, per lb.	1.0-3.0
— English cooking, per bus.	4.0-7.0	— Almeria, per bbl. of 60 lbs.	21.0-25.0
— Nova Scotian, per barrel ..	14.0-25.0	Lemons, per case	13.6-24.0
— Oregon, per box ..	9.0-12.0	Lycches, per box	1.4-1.6
— Wenatchee, per case ..	9.0-12.0	Nectarines, Cape, per box ..	4.0-8.0
Apricots, Cape, per box ..	4.0-6.0	Nuts, Brazils, new, per cwt.	65.0-70.0
Bananas, bunch—		— Cocoputs, per 100 ..	21.0-24.0
— Medium ..	7.6-10.0	Oranges, per case	12.0-40.0
— X-medium ..	9.0-12.0	— Californian Seedless, per case ..	20.0-22.0
— Extra ..	10.6-14.0	Peaches, Cape ..	6.0-10.0
— Double X ..	12.0-16.0	Pears, per case ..	22.0-25.0
— Giant ..	15.0-16.0	— Cape ..	4.6-6.0
— Red, per ton	120.0	Plums, Cape ..	4.0-8.0
— Jamaica, per ton ..	14.0	Strawberries, forced, per lb.	8.0-12.0
Chestnuts—		Walnuts, Naples, per cwt.	75.0
— Italian, per bag ..	20.0-22.0		
— Spanish, per bag ..	12.0		
Cobnuts, per lb.	0.5-0.6		
Cranberries, per case ..	—		

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes, Globe, per doz.	2.6-3.0	Mushrooms, cultivated, per lb.	0.9-1.3
— Jerusalem, per cwt.	5.0	— Buttons ..	1.3-1.6
Asparagus, Paris green ..	3.0-4.6	Mustard and Cress, per doz. punnets	1.0
Aubergines, per doz. ..	—	Onions, English, per cwt.	14.0-15.0
Beetroot, per bag	4.0	— spring, per doz. bun.	4.0
Beans, Broad, per pad ..	6.0	— Valencia, per case ..	13.0-14.0
— Madeira ..	6.0-10.0	Parsnips, per bag	3.0
Brussels Sprouts, per 1/2 bus.	3.6	Potatoes—	
Cabbage, per tally	2.0-4.0	— Channel Islands, per lb.	0.7-0.9
Carrots, per doz.	2.0-3.0	Radishes, per doz. bun.	0.9-1.0
Cauliflowers, per tally ..	8.0-12.0	Rhubarb, Forced, per doz.	0.9-1.3
Celeriac, per doz.	6.0	— natural, per doz. ..	4.0
Celery, per fan ..	0.9-2.0	Savoy, per tally	3.0-6.0
Chicory, per lb.	0.5-0.6	Seakale, per doz. punnets	12.0-15.0
Cucumbers, per doz. ..	10.0-18.0	Shallots, per 1/2 sieve ..	3.0-3.6
French Beans (Guernsey), per lb.	3.0-4.0	Spinach, per bus.	4.0
Garlic, per lb.	0.10-1.0	Tomatoes—	
Greens, per bag ..	2.0	— Teneriffe, per bundle ..	14.0-18.0
Herbs, per doz. bun. ..	2.0-6.0	Turnips, per cwt.	3.0
Horseradish, per bundle ..	2.6-3.0	Turnip Tops, per bag ..	1.6
Leeks, per doz.	1.0-2.6	Watercress, per doz. ..	0.6
Lettuce, Cabbage and Cos, per doz. ..	1.0-5.0		

REMARKS. English Apples, chiefly Bramley's Seedling and Dumbleton's Seedling, continue to arrive, good sound specimens being in request. Of the Overseas fruits, Oregon, Newton, and Albemarle Pippins are the best. The chief Pears now obtainable are Californian Winter Nohs. There have not been lately any arrivals of Cape fruits. English forced Strawberries are now available, and there are fairly plentiful supplies of Black Grapes. Supplies of Beans and Peas are limited, but Seakale, Cucumbers and Mushrooms are fairly plentiful. There are some good fruits of Teneriffe Tomatoes on offer. The market continues to be well supplied with outdoor produce. *E. H. R., Covent Garden Market, February 9, 1916.*

Potatoes.

	s.d. s.d.		s.d. s.d.
Bedford—		Lincoln—	
— King Edward ..	4.6-5.0	— Eclipse ..	4.6-4.9
— Blackland ..	3.9-4.3	— Evergood ..	3.9-4.3
— Dunbar ..	6.3-6.9	— King Edward ..	4.9-5.6
Kent—		— Queen ..	4.6-5.3
— Eclipse ..	4.6-5.0	Scotch—	
— King Edward ..	5.0-5.3	— King Edward ..	4.9-5.3
— Queen ..	4.9-5.3		

REMARKS. Trade is very slow, and the demand not good. Consignments from growers are fairly large, considering the condition of the trade. *E. J. Newbourn, Covent Garden and St. Pancras, February 10, 1916.*

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending February 9.

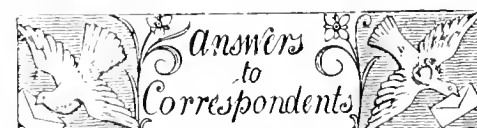
The seventh unseasonably warm week in succession. —This was another warm week, and the seventh in succession. On the coldest night the exposed thermometer registered 13° of frost, making this the coldest night as yet of the present winter. The ground is at the present time 1° warmer at one foot deep, and 3° warmer at two feet deep than is seasonable. Rain fell on five days and to the total depth of an inch. Nearly the whole of this amount fell on one day (the 3rd inst.), when over three-quarters of an inch was deposited, making this the wettest day for over four months, or since September 28. During the week 4½ gallons of rain water came through the bare soil percolation gauge, and 4½ gallons through that on which short grass is growing. The sun shone on an average for 2 hours 38 minutes a day, which is 20 minutes a day longer than is usual in February. On one day the sun was shining brightly for 7½ hours. The winds were as a rule high, but at no time did the mean velocity for the windiest hour exceed 24 miles. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 2 per cent. *E. M.*

THE WEATHER IN SCOTLAND.

The weather during January was mild. There was a small amount of rain, but gales were frequent. There were fourteen rainy days, with a total fall of 1.92 inch, the heaviest fall being on the 19th, with 0.6 inch. On sunshine we had 58.4 hours, being 25 per cent. of the possible; on nine days the sun failed to appear, while the brightest day—the 30th—yielded 6.5 hours. During the month the barometer varied from 29.406 inches on the 21st to 30.339 inches on the 30th, with a mean of 29.841 inches. The mean temperature was 42.5°, with a mean maximum of 49° and a mean minimum of 36°, giving a mean range of 13°. On the 15th the highest maximum of 56° was registered, and on the 13th the lowest maximum of 42°; the highest minimum of 42° was on the 18th, and the lowest minimum of 27° on the 28th. There were nine days of ground frost. The soil temperature at 1 foot deep rose to 40° on the 20th, and so remained to the end of the month. The relative humidity of the air was 84°, and the prevailing winds south-westerly. *James Malloch, Director of Studies, St. Andrew's Training College Gardens, Kirkton of Mauns, near Dundee.*

SCHEDULE RECEIVED.

Tewkesbury and District Daffodil and Spring Flower Society's Exhibition, to be held on Thursday, April 13, in the Town Hall, Tewkesbury. Hon. Secretary, Mr. F. Gregory, 65, Barton Street, Tewkesbury.



RUMUS FROM BENEATH PINE TREES: *W. E.* We do not recommend you to use this material in the place of peat. The resin in the pine needles would not be favourable to the roots of other plants.

NAMES OF FRUITS: *Launde Abbey*. Pear Madame Treve. *G. W. K.* Apple Brabant Bellefleur.

NAMES OF PLANTS: *G. B.* 1, *Petasites fragrans* (Winter Heliotrope); 2, *Berberis japonica* var. *Bealei*; 3, *Cupressus nootkatensis*; 4, *C. macrocarpa*. — *E. T.* *Tillandsia Lindenii* var. *vera*. — *J. B. D.* *Pittosporum tenuifolium* var. *Mayi*. — *Gunge*. Vicar of Wakefield.

PARSLEY UNHEALTHY: *J. A. Whitehead*. The specimens were too withered for determining the cause of injury. Send fresh plants packed in damp moss.

PEACH SHOOTS DISEASED: *R. T.* The "spots," which you will notice at the nodes—that is the region from which the leaves are produced—are due to a disease caused by the future Botrytis. Young, unripened shoots are most often attacked, therefore next season endeavour to have the growth well ripened. Cut away affected branches and spray the tree with a rose-red solution of permanganate of potash.

SEAKALE IN PUNNETS: *W. G. H.* The average weight of a punnet of Seakale, as marketed in Covent Garden, is from 2lb. to 3lb.

Communications Received — *G. T. S.* — *A. J.* — *W. M. R.* — *S. A.* — *N. C.* — *S. E.* — *A. H.* — *S. B.* & Son — *E. M. T. W.* — *W. I.* — *R. W. T.* — *C.* of *G. B.* of *A.* — *E. K. R.* — *D. C.* & *H. S.* — *G. & W.* — *S. H.* — *S. N.* — *E. R.* — *J. H.* — *Stawson* — *J. A.* — *A. O.* — *P. J. W.* — *T. W. B.* — *A. T. H.* — *P. P. S.* — *W. W.*

THE

Gardeners' Chronicle

No. 1521.—SATURDAY, FEBRUARY 19, 1916.

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NOTES FROM A COTSWOLD GARDEN.—II.

THE season has been truly wonderful; no one can remember anything like it here, and Mr. Gibbs tells me, what has been confirmed by Mr. Mill, that there has been no January so fine and mild for seventy-five years. In the month ending February 4 we have had only two nights with more than 5° of frost, and less than an inch of rain has fallen. The garden suggests March rather than January, but the fields are greener than they will be in March, and the air is softer. Tulips, Irises, Paeonies, and Eremuri, which ought not to move for another month, are above ground, and I fear will suffer for it later. English Elms in the vale of Gloucester are in full flower, *Garrya elliptica* and *Jasminum nudiflorum* are more beautiful than I ever saw them. Even *Arbutus*, grown from seed which ripened at Tortworth, though not really hardy here, is in flower. But what I bought for *Arbutus Andrachne*, which should have the most beautiful bark of any tree I know—like red Russian leather covered with peeling strips of thin white paper, turns out to be a bad form of *A. hybrida*, which is often, if not usually, sold for *Andrachne*; and Mr. Bean cannot tell me where to get the true species, of which I used to know a splendid specimen at Williamstrip Park, near Fairford, where the climate is no better than it is here. Now that so many of our soldiers are in its native country, it is to be hoped that someone will send us seeds of this beautiful small tree.

The only other shrub I need mention is *Daphne Mezereum album*, which is hardly in full bloom, and which I think is our most beautiful winter-flowering native shrub. It does not, however, live long here, usually dying after a few years. Two causes have been suggested for this; one, which I think the more probable, is that its thick, succulent roots suffer in dry summers, unless they are in a cool and moist subsoil, which, however, must be well drained; another is that it seeds itself to death. This latter explanation is

perhaps only true on thin, dry soils like mine, but as it can be very easily raised, and the white form always, in my experience, comes true, it is worth raising a batch every two or three years.

Of the *Megasea* section of Saxifragas, which from a horticultural point of view form a very distinct genus, the earliest to flower is *S. ligulata* var. *speciosa*. This is said by Mr. Irving to flower normally in March, but under the shelter of a bush, facing south, is now in full flower, and has retained its large, leathery leaves, which are glabrous on both surfaces, quite fresh through the winter. It is much superior as a garden plant to the Nepalese form figured in *Bot. Mag.*, t. 3,406, which has much paler flowers; and also to the form *ciliata*, *Bot. Mag.*, t. 4,915, which has the leaves hirsute on both surfaces and the flowers white or pink. This latter I have to keep in a frame, as it is more tender than *ligulata*, though according to C. B. Clarke [*Flora of British India*, Vol. II., p. 399] it comes from a higher elevation. I have found species of *Saxifraga* so low as 5,500 feet in Sikkim (in the Lachung valley a little above Choongtam), and at Chakrata, in the N.W. Himalaya, but *S. ligulata* grows as low as 4,000 feet in the Khasia Hills, where the climate is almost tropical. It seems to me that a revision of the numerous forms found in the Himalayas, and the others recently introduced from China, is very much wanted.

Narcissus canariensis is a remarkable instance of a plant flowering out of season. It seems to me to be merely a form of *N. tazetta*, which in the climate of the Canaries has changed its normal time of flowering from spring to autumn; and though I have had it for some years, it has usually flowered here in October and November. This year, however, some of the bulbs have reverted, and are now pushing up their flowers in the open ground, though no other *Narcissus* will bloom for a month. It is possible, however, that mine are not the true *canariensis*, as the flowers are larger than those figured from dried specimens by Burbidge. A very beautiful bulbous Iris is well out in the frame, where it was planted in a very dried up condition in November, 1914, as received from Siehe under the names of *I. Tauri* and *Heldreichii*. On referring to Dykes' *Monograph*, I find that both these names are treated as varieties of the old *Iris persica*, which to my eye shows one of the most lovely combinations of colour even in this lovely genus. No fewer than four plates of various forms of the species have appeared in the *Bot. Mag.*; under the names of *I. Siehana*, t. 8,059; *I. stenophylla* Heldreichii, t. 7,734; and *I. Tauri*, t. 7,793, but none of them represents my plants, which Mr. Dykes considers to be *I. Tauri*.

It is a melancholy reflection on modern artists, and still more on modern publishers, that the first plate of typical *Iris persica*, which is plate 1 of the *Bot. Mag.*, drawn and painted by Mrs. Montague Burgoyne, and published by William Curtis in 1787, is a more faithful and better-coloured illustration than the three later ones.

A really new plant collected personally in a far distant land, is perhaps more interesting to the finder than to others, but I must here mention *Oxalis Griffithii* of Edgworth and Hooker, which I found at about 9,000 feet on one of the eastern spurs of the boundary ridge between Nepal and Sikkim, in March, 1914, and deposited with Mr. Cave in the Lloyd Botanical Garden at Darjeeling, until it could safely be sent home by post

when at rest. It has just produced its first flower, and though not such a beauty as *Oxalis adenophylla*, from the Andes—which I always look on as the best Alpine plant that I ever introduced—it is interesting as being, I think, the only *Oxalis* peculiar to the Himalaya, and one of the very few species found in the North Temperate zone; nearly all the *Oxalis* being South African or South American. Being nearly allied to our native Wood Sorrel, *O. Acetosella*, also found in the Himalaya, I believe it would live in rich woodland in the south-west of England.

The number of Crocuses now out is overwhelming: I counted no fewer than twenty-four species according to Maw's *Monograph* in flower on January 30, and saw others in Mr. Bowles' garden last week. But of these only a few are suitable for ordinary gardens, because in order to distinguish many of them you must see the bulb, the spathe, the anthers and stigmas; and as in winter it often happens that there is not one day warm and sunny enough to open the flowers fully, you must grow them in pots, and bring them into a warm room in order to see their distinctive characters. The corm coats also, which often persist for many years in the hot, dry soils of their native habitats, lose much of their distinctive character in England when taken up every two or three years, as must be done if they are to be kept from getting mixed in gardens. Maw used to say, however, that he could distinguish every good species by its corm alone, and one must study his wonderful *Monograph* closely to realise the amount of care, trouble and travel that he devoted to this book, which will always remain a model of what a monograph ought to be. No one but Mr. Dykes has produced its equal, and yet there is neither a *Crocus Mawii*, nor an *Iris Dykesii*, to remind those who have not got the books of what the authors did so well. Now, if I were asked to select out of these twenty-four winter or early spring-flowering species the best, which everyone should grow, I would say, without considering the forms of *aureus* and *vernis*, which florists have produced, that *C. Imperati*, the Neapolitan *Crocus*, is that one, because of its size, markings, good constitution, and ability to open its flowers in comparatively dull weather. Next to this, for the same reasons, I would put *Boryi* (often known as *atticus*), *Tomasianus*, *Weldenii albus*, and a small but very beautiful *Crocus* which is, I believe, the true *C. minimus*, which was sent me many years ago by Maw from Corsica, and has increased and multiplied without any special care. It is not the *C. minimus* of *Bot. Mag.*, t. 2,291, which is now considered as a variety of *C. biflorus*. Among the eight or ten yellow-flowered species, I should be satisfied with two or three, namely, the Central Asian *C. Korolkowii*, on account of its very distinct leaves and corm, rather than for its colour; and the much more showy forms which have been raised from seed of *C. chrysanthus*. This plant in the district where I found it is pale yellow, often marked with brown or chocolate stripes, but in its more northern locality it varies from seed to such an extent that I could hardly believe that the beautiful forms which Mr. Bowles and Mr. Hoog have produced have really all sprung from a common parent. But if *Korolkowii* is not showy enough for the public, the old Cloth-of-Gold *Crocus susianus* must be omitted from no selection, though in normal years it does not come into full beauty till March. H. J. Elwes, Colesborne.

SYNTHYRIS.

ALL the species of *Synthyris* are natives of Western North America, and are closely allied to the *Wulfenias* of South-Eastern Europe. Most lovers of Alpine plants are familiar with the blue early-flowering *S. reniformis*. This, with its loose racemes of blue flowers, produced well above the rounded leaves on long petioles, is a charming and useful plant for shady places in the rock garden.

S. rotundifolia (Fig. 37), also known as *Wulfenia cordata*, is a low-growing perennial with a creeping rootstock. It produces a tuft of leaves which are rounded in outline with a cordate base. The bluish-white flowers are borne in loose racemes on stems about 3 inches long, and open early in the first months of the year. The plant grows wild in Oregon, usually in shady, coniferous woods. It is not a strong-growing species, but forms a useful subject for the garden on account of its early flowering, and is welcome in the Alpine house at this season.

Among the other members of this genus in cultivation are *S. plantaginea*, with large leaves

MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.*

XXX.—THE EARLY HARVEST.

ONE has hardly time to turn round, it seems, between the opening of a flower here and the falling of its seed. Worst of all are the *Corydalis*, truly here to-day and gone to-morrow. There is an abundant and very beautiful azure-blue one, universal all up the Border, and commoner than *Daisies* in a vicarage lawn: of this, by sitting sedulously at its side from day to day, I hope I have secured two sound seeds. Watching a pheasant for the psychological moment when it falls from the tail by which it is suspended, is nothing to this: as for the radiant blue-and-white *Corydalis* of the high alpine shingles, the only thing to do is to dig it up and plant it in a box down below to ripen. And even then, if you turn your back for a moment its pods explode, and away go the seeds irrecoverably in every direction. *Iris goniocarpa* is another nightmare. It abounds in this district, and I had hoped, by sitting on the spot, to get a goodly harvest this year.



[Photograph by W. Irving]

FIG. 37. SYNTHYRIS ROTUNDFOLIA. FLOWERS, BLuish WHITE.

and dense spikes of purplish flowers; and *S. pinnatifida*, with finely divided leaves and flowers of the same colour as the last. They may all be grown in shady, moist positions in the rock garden, and are propagated either by division or by means of seed, which is produced in fair quantity. W. I.

TREES AND SHRUBS.

COTONEASTER ANGUSTIFOLIA

THIS compact, erectly-growing shrub provides welcome colour in the early months of winter, the shoots being thickly furnished with the bright yellow berries. When the ground is covered with snow, the effect of the yellow berries against the dark green of the foliage makes a very pretty picture. The shrub is equally effective as a single specimen on a lawn or in a shrubbery. It will thrive in almost any soil or situation. Other good varieties of *Cotoneaster* are *C. Franchetii frigidula*, with brilliantly red berries, and *C. horizontalis*, of fine habit, of which the berries are also red. H. W. Ward.

Not a bit of it. The *Iris* here inhabits ins and outs of low scrub and grassy places; later in the season herbage overgrows it, and the green pods are as hard to find as needles in hayricks. When you do find them they are, as I say, green: next day you come back: they are brown and sere, and the seeds all flown to glory. More than that: when the pod feels it is getting ripe, it becomes tired, and wants to lie down, and is more undiscoverable than ever. So that, I can tell you, one lies awake of nights over *goniocarpa*.

On the contrary, one waits impatiently for other things that never seem to be going to ripen at all. Of such is *Lancea tibetica*, the very pretty Mazus-like thing that runs about in the hot shingles and loess banks. And of such too, is my beloved *Edelweiss*. This district is most fertile in *Edelweiss*-forms, and whether, or if, any of them can really be separated from *Leontopodium alpinum* I dare not say, as one

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 21, November 14 and 28, 1914, January 2, February 27, March 20, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 10, November 13, 20 and 27, December 11 and 25, 1915, and January 8, 15, 22 and 29, and February 5 and 12, 1916.

can easily find connecting links in a whole unbroken series, from the fine Himalayanum-form of the lower Alps to that of the uppermost ones, which seems absolutely pure and typical Flannel Flower of Austrian hats, though, perhaps, a trifle shorter and broader and blunter in the involucre leaves. One form, however, stands so far apart as to give me hopes of its being a valid species (though I believe the suffrutescent habit is also found in *L. japonicum*, ranked by some as a mere variety of *L. alpinum*). For this is a most neat and dainty little sub-shrub, suggesting a youngling bush of Lavender, sending up each year a simultaneous mass of wiry, erect, and undivided shoots, some six-nine inches in height, beset all up by narrow foliage of silver-grey. In late July the whole mass is crowned with pointed-rayed stars of clearer white than the foliage, and of delightful effect on the delicate, yet sturdy, stems. And, to add a final merit, all parts of the growth have exactly the same delicious scent as the Lemon Verbena, and should handsomely replace it in pot-pourri and head-cushions. If only it will condescend to ripen seed before I go: at present its capitules are all gone dingy, but there is no sign of any further development. It is peculiar to river shingles, hot open banks and stony places of these parts, up to some 11,000 feet: and in the garden would make the loveliest association in the moraine with my *Delphinium Pylzowii* and *Meconopsis Prattii*, though here it does not ascend to their elevations, where its place is taken first by the Himalayanum-form, and then by the original *L. alpinum*.

While I during this time was working this range for its seeds, and touring about among the great abbeys, Purdom was gone off to the Koko-nor and Gwold Alps to see if they would yield any variation on the Flora of these parts, which makes up (or tries to) in beauty for what it lacks in variety. It cannot be said that his search was rewarded. Truth to tell, the distribution of plants in this corner of the world is a great deal too wide to satisfy the horticulturist who wants a new *Primula* at every turn of the track, instead of meeting with nothing but the same everlasting things wherever he may go. Purdom, indeed, saw *Meconopsis racemosa* and *Papaver nudicaule*; otherwise he found himself encompassed unceasingly by all our old friends, and the chief real novelty was what is obviously *Potentilla Salesoviana*. Now *P. Salesoviana* is a rare plant in gardens: it has been at Ingleborough these two years, and has there in the fit, comfortable place assigned to it once produced (I think) one flower. But from what Purdom tells me I learn that *P. Salesoviana* requires quite other treatment, and requires it. For it is a plant confined to river shingles and such like barren, hungry places: there, as Purdom saw it, the bloom is free, and its effect of remarkable beauty. Let all those, then, who have *P. Salesoviana* immediately learn its true character by putting it on hunger-strike.

He found, too, various *Asters* about the Koko-nor, some of which seem new to our collection, though the handiwork of all is the same, I believe, as was sent last year, even if here (for it abounds throughout the Alps) it appears a little brighter in the violet of the ray florets, and occasionally, but very rarely, produces more than one flower on the stem. But local variations must not be taken for specific ones by a too sanguine heart: this *Aster's* freaks, I take it, mean no more than do the remarkable broad leaves here usually assumed by *Meconopsis Prattii*, in its first year of life. Purdom also settled my doubts about *Androsace tibetica* *Mariae*, which I had been unable to identify with the prevalent form of the Da-Tung region, seeing that where *A. Mariae* should have specially narrow leaves, the type of hereabouts has conspicuously ample ones, wider than in any I remember on the Min-San Border. Now I find that the narrow-leaved *A. Mariae* is the form of the Koko-nor district, where it was in full flower in mid-August, long after the *A. tibetica*

of Wolvesden was over, and, indeed, ripe in seed, which leads me to believe that here we have yet another distinct type of *A. tibetica*, conspicuous in brilliance of colour and amplitude of leaf and flower.

The later days of summer bring out the *Adenophoras*. Lower down there is abundance of the noble wide panicle one, with crinkly greyish leaves, and up here, often flaunting from the rocks, a pretty thing, exactly like a single-flowered harebell, with a delicate scent of almonds. And there is a little pink *Orchis*, too, deliciously sweet; but *Orchidaceae*, up so high as this, are represented by only small, insignificant species. Not a single *Cypripedium* has anywhere greeted my eyes this year. Which reminds me to answer publicly (as I have done already privately) Mr. Cox's interesting note of July 3. If he consults the ruling authority he will see that *C. hirsutum* is the only original and valid name, as I said, of *C. "spectabile"* or *Reginae* of gardens, and has no application to *C. pubescens*, in itself, I think, an invalid name. And how misleading are even the most painstaking word-portraits of plants! For my later-mentioned species have no reference whatever to *C. debile* or *C. arietinum*. Alas! that I did not succeed in getting them home alive! However, specimens exist, and a speaking portrait of *C. Sweetlips*. *Reginald Farrer*.

THE ROSARY.

THE NEWER ROSES IN THE GREENHOUSE.

THERE seems to be an erroneous impression prevalent that only a few varieties of Roses are suitable for forcing purposes. Whilst this may be true from a commercial point of view, it is wrong from the amateur's standpoint. There are few Roses that cannot be grown as greenhouse plants. The usual reason of failure is the attempt to force unestablished plants or those which are weakly grafted. There seems to be a special fascination about a new Rose: and recent years have given us a rich array of novelties which in the greenhouse often yield wonderfully attractive colours, not always to be had in the open. The following newer Roses give excellent blooms:—

Queen Mary (H.T.) (see fig. 38).—Although when grown out-of-doors last summer the blooms of this variety were charming, I never saw such colour as prevailed in this Rose when grown under glass—an exquisite tint of carmine, with a golden suffusion. The growth is sturdy, though not vigorous, and it makes a very beautiful pot plant. I might say to those who would wish to grow pot plants that it is not yet too late to pot selected and well-rooted ground plants for greenhouse culture next season. This is a far better plan than buying weakly grafted plants which possess no root power. A new Rose is too often judged from the weakly specimens that are first distributed.

Countess Clancwilliam (H.T.). A shapely flower of delicate Peach pink, flamed and edged with deep Cherry red.

Mme. Edouard Herriot (Pernetiana). Indispensable for its marvellous colour. The buds are of a rich flame shade, the open flowers varying from prawn-red to old gold and coral. A splendid grower, but its immense prickles and weak neck detract from its usefulness, especially as a commercial bloom.

Edgar M. Burnett (H.T.). A fine, large, full Rose of glorious form, reminiscent of *La France*, but superior to that variety. Very fragrant.

Hadley (H.T.). A rich, velvety-maroon and scarlet, of fine form, producing its flowers erect on long stems. This Rose must become a favourite for forcing by reason of its dark colour, which was much needed, and delicious fragrance. Out-of-doors it has a tendency to turn a bluish-crimson, but not under glass. *Hadley* is a good variety to seed, and I am

hoping to obtain some good novelties from hybrid seeds just sown.

Hoosier Beauty (H.T.) is another deep red American variety of much promise. It will probably need strong heat to bring it to perfection, as it is strongly double. All who saw the blooms last spring, when the variety received a gold medal, were loud in its praise. Mr. E. G. Hill, the raiser of Richmond and General McArthur, strongly recommends *Hoosier Beauty* for forcing.

Mrs. Charles Russell (H.T.) has proved a fine Rose, both for forcing and cultivating out-of-doors. Its splendid fulness and fine shape will place it in the front rank. Plants should be potted at once for another season.

Ophelia (or "Lady Love," as it is sometimes named on the market) is still a great favourite, and is likely to remain so for a long time. It possesses all the desirable attributes—fragrance,

Loureiro, Lady Dunleath, and Edith Part. Of Polyanthas and new Ramblers I may write on another occasion. *Experienter*.

THE LOGANBERRY.

This plant is a robust grower, and a profuse bearer. The large conical-shaped fruits are of a deep, reddish-maroon colour, and have a fine flavour. The plant is a hybrid between the Raspberry and a Blackberry (*Rubus vitifolius*), and partakes in equal parts of the flavour of each. It makes a good dessert fruit, being handsome in appearance; it is also excellent for tarts and preserves. The fruit is borne on long-stemmed clusters. The plant will grow and flourish in almost any garden or field soil, and should be grown by anyone who possesses sufficient room in garden or allotment.



FIG. 38.—HYBRID TEA ROSE 'QUEEN MARY'. COLOUR OF FLOWER, PINK AND GOLD.

faint colour, shapely buds that open freely, and sturdy stem, often measuring two feet.

Radiance is an American Rose, much valued in the States as a forcing variety. It is not exactly new, for it was introduced in 1909, but it is almost unknown over here. I have it growing out-of-doors. It has a stately appearance, the rich pink flowers being borne erect upon fine stems.

Mrs. E. Alford somewhat resembles *Madame Abel Chatenay*, but is more double. It lacks, however, the delicious fragrance of its rival, so that one may safely say that *Chatenay* is still unsurpassed.

Old Gold should be grown where a beautiful bud Rose is desired. It is of very little value when fully expanded, but its long tapering buds are a wonderful colour and freely produced. There are other novelties well worth trying, such as *Mme. C. Martinet*, *Milady*, *Souvenir de Péripoux*, *Dora Van Tebs*, *Souvenir de M.*

It is a profitable crop, the plant commanding a ready sale. The plant requires ample trellis space, a rustic fence, or poles, in order to support its long growths. After the fruit has been gathered, the old growths should be cut out to admit plenty of light and air to the growths of the current year. W.

BACTERISED PEAT.—It is announced that the Manchester City Council has accepted Prof. BOTTOMLEY's offer of the free use of his patents for the manufacture of bacterised peat, and that it is prepared to spend between £300 and £400 in experiments on some 30 acres of raw peat on Chat Moss. The manufacture of this fertiliser will be carried on at the Cleansing Committee's plant at Hot Town. The output will be used for trials on the local small holdings and the surplus will, it is believed, be available for experimental purposes elsewhere.

ORCHID NOTES AND CLEANINGS.

ORCHIDS AT BURFORD, DORKING.

MR. E. SWINDEN, Orchid-grower to Elizabeth Lady Lawrence, Burford, kindly sends flowers of the following interesting specimens now in flower there.

HABENARIA ROEBELENI.—A rare species introduced from Annam in 1912. The late Sir Trevor Lawrence was fortunate to obtain two distinct varieties in the small mass purchased by him. The flowers of the plant type are light blood-red and appear much earlier than those of the Burford form, of which a stout inflorescence with eleven flowers is sent. The flowers are $1\frac{1}{2}$ inch long and $1\frac{1}{4}$ across the labellum; the colour is vermilion with an orange shade. The typical form has gone to rest after flowering. Of the lighter variety Mr. Swinden says: "This is the best of the *H. militaris* section, and lasts longest in flower. The first flower opened in the first week of December and the spike is not yet fully developed."

WARSCWICZELLA (ZYGOPETALUM) LINDENII.—One of the handsomest of the leafy section of *Zygopetalum* with pure white flowers, the labellums being 2 inches wide and having slight violet lines in the centre.

SOPHRONITIS GRANDIFLORA LOWII.—An ally of *S. grandiflora* Rossiteriana, which has yellow flowers, the variety Lowii differing from it in having rather smaller and darker yellow blooms. The variety was shown by Messrs. Low as *Sophronitis Lowii* at the meeting of the Royal Horticultural Society on March 3, 1908, and in describing it in *Gardeners' Chronicle*, March 7, 1908, we stated that the flowers were yellow, tinged with salmon. As now seen, they are clear chrome-yellow.

EULOPHIELLA PEETERSIANA.—A stately species, the spike, 4 feet in height, bearing twelve fully-expanded rosy-mauve flowers.

CYPRIPIEDUM LUXEMBURGENSE (ARGUS × FAIRRIEANUM).—One of the best Fairricanum crosses. The original was raised by Monsieur Opoix and flowered in 1907. The Burford form has a white dorsal sepal with about fifteen dark claret lines; the broad petals are cream-white, with eight or nine dotted lines of chocolate-purple, the margin being ciliate; lip greenish, tinged with purple.

SOPHRO-LAELIO-CATTLEYA RUBENS (S.-L.-C. EROS × S. GRANDIFLORA).—A neatly-formed flower 4 inches across. The sepals and petals are purplish-lilac, the lip white at the base veined with purple, the front lobe claret-red. Although *Sophronitis grandiflora* enters into its composition twice, there is little trace of it visible, the *Laelio-Cattleya elegans* Turneri, parent of S.-L.-C. Eros, dominating. The R.H.S. list of awards makes S.-L.-C. Eros a variety of S.-L.-C. Veitchii, which is recorded generally as L.-C. Schilleriana × *S. grandiflora*, but in other records L.-C. elegans is given. They are distinct, but both were commonly known in gardens as L. C. elegans.

FLORISTS' FLOWERS.

THE BEST PERPETUAL-FLOWERING CARNATIONS.

THE market grower, the amateur, and the professional gardener all want free flowering, healthy, vigorous varieties of Carnations. The only difference between these three sorts of growers is that the first grows the different varieties in thousands for the market, while the other two simply grow them for garden adornment.

For market growing the following varieties are most worth considering:—Champion, Beacon, and Scarlet Glow. Champion is the best scarlet variety we have to-day; its blooms are finer and of a better colour in winter than the other varie-

ties. Beacon undoubtedly comes second, but Scarlet Glow has deteriorated, and produces too many poorly coloured blooms during the winter. Profitable white varieties are Wivelsfield White, White Enchantress and White Wonder. Of these Wivelsfield White is the best. It is the freest flowering of all, and makes a fine healthy plant, but its great merits are purity of colour and good lasting qualities. White Enchantress comes next, but one must have a good selected stock. White Wonder is not so good as it was, and produces more second quality flowers now than formerly. Among crimson varieties Triumph is first for quantity and pays the best. The new Princess Dagmar produces very large, fine flowers, and is healthy in growth, with good, strong stem and calyx. Carola does not pay to grow. Many growers have tried hard with it, but now that the charm of novelty and the high prices have worn off they are giving it up.

Among light pink varieties May Day is the best. Enchantress Supreme comes next. The blooms are, perhaps, better than those of May Day, but it is not so prolific.

The most profitable deep pink variety is Mary Allwood, two-year-old plants producing large crops of bloom. Salmon Enchantress is preferred on the market to the old Rose Pink Enchantress, owing to its improved colour. In cerise-pinks, Mrs. C. W. Ward is best, with Rosette, of a deeper shade, second. Gorgeous is a failure, owing to its shy flowering qualities, and can only be a success at exhibitions. Winsor is one of the best Carnations ever raised, but old age is destroying it. The new Philadelphia is a good variety, if grown in a cool house. It is a great plant maker, and should become popular.

In heliotropes old Mikado is good. Fairmount produces some very fine flowers, particularly the two-year-old plants. The new Bishton Wonder is also a good variety. Yellow varieties do not pay to grow for cut flowers, but Yellowstone and Sunstar are the two best of that colour. *Market Grower.*

FRUIT REGISTER.

APPLES.

"SOUTHERN GROWER," page 85, asks how D'Arcy Spice syn. Baddow Pippin succeeds in other parts of the country. I regret to say it is not good here this season. The fruits are eatable, but they have scarcely any flavour. Last season it was remarkably good, both in flavour and size, and I formed a very high opinion of its merits for this district. Probably its failure this season is owing to the lateness of the spring, when everything appared to be a fortnight behind, and the summer gave no opportunity for this backwardness to be overcome. The thermometer on the grass was down to 27 degrees on June 19; July was much worse, the rainfall being 3.26 inches above the average, the mean temperature 3.54 degrees below the average, and the sunshine 29.6 hours below the average.

I have heard many complaints of this variety being a bad grower, but with me it grows well enough, and bears well, and I hope in the majority of seasons it will do much better than it has done in the present one.

We are much later here than *Southern Grower*; Cox's Orange Pippin is now at its best; Blenheim Pippin is still very good in flavour; Wyken Pippin is at present remarkably good. I remember eating it in October in Kent many years since. One of our best flavoured apples this season has been King of the Pippins, whilst many others have not been so good as usual. Cathlin Pippin bearing for the first time, from grafts kindly sent by Dr. Appleton, resembles D'Arcy Spice in many ways, but ripens sooner. W. H. Divers, F.M.H., *Belvoir Castle Gardens, Grantham.*



THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

COELIA.—Coelia is more or less a botanical genus; nevertheless, *C. bella* is a pretty species that flowers at this season; *C. macrostachya* and *C. Baueriana* are also in cultivation. They all succeed in the *Cattleya* division, and, even when not in bloom, are attractive subjects. After the flowers are over growth begins afresh, when re-potting may be done. Ample drainage material must be provided; Osmunda-fibre or peat mixed with a moderate quantity of Sphagnum-moss forms a good rooting medium; the fibre and peat should be used in a lumpy condition. When growing freely Coelias require plenty of water, but when the pseudo-bulbs are fully matured a little moisture will suffice to keep the plants healthy.

CHYSIS. Such species as *C. aurea*, *C. bracteosa*, *C. Chelsonii*, *C. laevis*, *C. Limminghei*, and *C. Sedenii*, have completed their resting season, and are now about to start into growth afresh. The flower-spikes are produced simultaneously with the new growth, and until they are seen water should be applied sparingly, but afterwards the amount should be increased. Plants that fail to bloom may be repotted, but the potting of the remainder should be deferred until the flower-scapes are removed. Use pots or fairly deep pans with wire hangers attached to suspend them from the roof rafters of a warm house. Very little drainage material is needed. The compost may consist of a mixture of fibrous loam and Osmunda-fibre. When the new pseudo-bulbs are fully matured a small quantity of water suffices to keep the plants in a healthy condition. Rest the plants with *Dendrobiums*, or place them at the cooler end of the *Cattleya* house.

SOPHRONITIS GRANDIFLORA.—Soon after the blooms are removed fresh soil may be afforded the plants, if necessary. Frequent or even annual disturbance of the roots is not desirable if the compost is in a sweet condition. Shallow pans are the best receptacles, and they should be well drained, as *S. grandiflora* requires only a small quantity of rooting material, which should consist of Osmunda-fibre or peat and a mere sprinkling of Sphagnum-moss. When in active growth the plants should be staged close to the roof-glass of the intermediate house and kept moist at the roots. When the small pseudo-bulbs are matured very little water will be needed. Plants for seeding should not be disturbed until the capsules are ripe, and must never suffer from dryness at the root. Let the pots be well drained, and use a compost consisting of good fibrous loam, Osmunda-fibre, and a moderate quantity of crushed crocks or rough sand. Grow the plants in the *Cattleya* house, and keep them free from insect pests.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOKE, Eastwell Park, Kent.

MORELLO CHERRIES.—As the Morello Cherry does well on north walls advantage is often taken to plant the trees on exposed outside garden walls, but they should in no case be neglected. The shoots are often trained much too thickly on walls, and if this practice is persisted in it will eventually ruin the trees, and the fruit that is produced will have no chance to develop properly. The Morello, as distinct from the Sweet Cherry varieties, fruits best on healthy ripened growth of the previous year. The pruning should be on the same lines as for Peach trees; that is, cut out as much of the old fruiting wood as can be spared and fill the space with young healthy shoots.

STANDARD MORELLOS.—Though commonly trained on walls, the Morello Cherry may be grown successfully as small standard trees. For such trees a different system of pruning should

be followed to obtain fruiting spurs. This is brought about by constant attention to stopping during the growing season. Shorten the leading shoots to about 6 or 9 inches, and all side growths at three or four leaves. The shoots will eventually form spurs which will fruit well, and the slender growth will not be so pendulous if pinching is carried out right through the season.

PREPARATIONS FOR GRAFTING.—In most gardens there are inferior varieties of fruit trees and others that do not fruit successfully. Such trees, if healthy, may be headed down for grafting later in the spring. This also offers a capital method of trying new varieties, as the trees will fruit much more quickly than young plants. Procure the scions early, and partly bury them in a cool, damp border till required, examining them occasionally to see that they are not molested by rats or other vermin.

THE PROTECTION OF FRUIT-BLOSSOM FROM FROST.—There is a difference of opinion as to the necessity of protecting fruit blossom in spring, and local conditions vary so much that experience is the best guide in any particular locality. Owing to the mild winter, the earlier flowering fruit trees, such as Apricots, Peaches and Nectarines, are already developing their buds, and as it is probable that severe frosts may still be experienced, measures should be taken to save the bloom from damage by employing such means as may be judged most suitable. But any such protection should not be employed until the flowers are just about to expand, as up to that stage it will be much better if the trees are left fully exposed. An excessive use of protection would probably defeat the object in view—that of saving the fruit crop. Heavy permanent coverings must be avoided, as these would tend to make the blossoms and growth tender and more susceptible to injury by cold winds or frosts. If coverings can be so arranged that they may be quickly and easily removed each morning, this will answer well; but where a large number of trees are grown this would take up more time than can be spared in present conditions. The most convenient method is that of having a light protection, such as thin tiffany, or a double thickness of fish netting, and leave this hanging in front of the trees till the possibility of danger from frost is past. This kind of covering, though comparatively open, will ward off much frost, and will also allow plenty of sunlight and air to reach the trees, thus keeping them in a thoroughly hardened condition.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Leckinge House, Wantage, Berkshire.

CANNA.—The plants may be shaken free of the old soil and repotted. Separate the roots and use only the most promising portions unless the others are needed to increase the stock. The Canna is easily increased by division of the roots, therefore it is not desirable to retain any but the best varieties. Use a rich compost, one composed of fibrous loam, leaf-mould, manure from a spent Mushroom-bed, and coarse sand.

BEGONIA.—Begonia tubers are on the point of starting into growth, and if not already done they should be shaken free of the old soil and placed closely together in shallow boxes or pans filled with sifted leaf-mould. If it is desired to increase the stock, some of the larger tubers may be divided. Place the tubers in a house of moderate warmth until growth becomes active, when they should be potted and grown in a warm, moist house. Seed may be sown in pots or pans filled with fine, light compost: as the seed is very minute, it is a good plan to mix it with a small quantity of fine sand before sowing, to ensure it being evenly distributed on the surface. After sowing the seed cover the seed-pans with a sheet of glass, and the glass with a sheet of paper till the seeds have germinated.

CYCLAMEN.—If afforded proper attention the old plants should continue to flower for some time to come. Remove dead flowers and leaves regularly, and, as a precaution against damping, do not allow water to reach the centres of the plants. Extra good specimens which have

been selected for seed-bearing should be placed on a shelf near to the roof-glass, where they will be exposed to the sun's rays. When the seeds are developing the roots should receive plenty of stimulant.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

SWEET PEAS.—If the ground intended for the planting of Sweet Peas raised under glass was not cultivated last autumn, the work should be done forthwith in order to allow time for the earth to settle and become firm before the time for planting arrives. A method which I have successfully adopted when growing the plants on what are known as exhibition lines (scarcely perhaps suited for war times) is as follows: A strip of ground two and a half feet wide is marked off and the soil for a foot deep is thrown out on one side. This is then levelled somewhat, and over it is spread a liberal layer of dung and leaf-mould. Another foot of soil is thrown out of the trench on the top of this heap, and this in due course is levelled and covered with dung and leaf-mould as before. The bottom soil in the trench is well broken and manure incorporated with it. The heap made with the two spits of soil, dung, and leaf-mould is then turned over from end to end in the same way as when mixing compost for a vine border. When the turning has been completed the soil is shovelled back into the trench, firming it as the work proceeds if this is considered necessary. In this way the manure becomes mixed through the whole mass of soil, which is better than putting it in layers.

PRICKING OUT SEEDLINGS.—Seedling Antirrhinums and East Lothian Stocks need transplanting from the seed boxes. It is an advantage to move them early to prevent the shoots from becoming drawn and to lessen the danger of damping. The boxes should be prepared in precisely the same manner as for seeds, with a layer of leaves in the bottom, and over this a few inches of sandy soil and leaf-mould that has been passed through a quarter-inch sieve. Press the soil firmly in the boxes, and especially around the sides. After the compost has been made level it should be covered with a thin layer of fine soil. I find it easier, instead of using a dibber for making a hole for the seedlings, to use an old weeding knife for drawing the soil forward to make space for the seedlings. After the work of planting is completed water the soil and place the boxes close to the roof-glass, where they will not come under the influence of the syringe.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

EXHIBITION CARROTS.—If early Intermediate Carrots are required for exhibition, partly fill a deep brick pit with soil of moderate quality, making it firm. Bore tapering holes with a crowbar 2 feet 6 inches deep and 2½ inches in diameter. Fill the holes with a light, sandy compost, containing a small quantity of fertiliser and a generous proportion of fresh wood ash, but no leaf-mould or decayed animal manure. Lightly press the soil in the holes with a small rammer, and sow several seeds at each station about an inch deep. Close the frame until the seeds have germinated, and afterwards ventilate gradually. Spray the plants and close the frame early in the afternoon of sunny days. Afford the crop protection from frost. If long Carrots are not desired, a short variety, such as Favourite, may be sown in drills in the usual manner, subsequently thinning the seedlings as required.

LETTUCE.—A sowing of Lettuce made now in a cold frame will provide hardy plants for transference to the open early in April. Ventilate the frame freely, removing the lights altogether as soon as it is safe to do so.

PARSNIPS.—Make a sowing of Parsnips when the weather permits in deeply trenched ground that has been well manured the previous season. Sow in drills made an inch and a half deep, and from 15 to 18 inches apart. If exhibition roots

are desired, make tapering holes with a crowbar 18 inches apart and of a suitable depth, the hole to be 5 inches in diameter at the ground level. Fill the holes with fine sandy soil, press gently, and sow a few seeds an inch and a half deep near the centre of each hole.

LONG-POD BEANS.—A further sowing of Broad Beans may be made when the weather permits. Sow the seeds in double rows 3 feet apart, allowing a space of 9 inches between each seed. Some protection will be afforded the seedlings if this sowing is made in shallow trenches. If the weather is unfavourable or the land heavy, make the sowing in boxes, as advised on page 33. Varieties of the long-podded section are the most prolific.

SHALLOTS.—The bulbs should be planted at the earliest opportunity. Set them 9 inches apart in the rows, making the lines 1 foot asunder. Choose well-tilled soil in a warm, sheltered spot. In such a position the crop will be ready for harvesting at the end of June, and the site may be utilised for some other crop.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Water Priory, Yorkshire.

LATE PEACH HOUSES.—Push forward the work of cleansing the houses and trees, and tying the shoots, in order that the trees may be in a proper condition when the time comes for them to start into growth without the aid of fire-heat. See that the borders are kept sufficiently moist. One of the principal causes of bud-dropping is drought at the roots in winter. Do not allow the temperature to rise too high in mild weather.

MELONS.—Although the winter has been mild, the days have been dark and almost sunless, consequently the growth of Melons is weak and deficient in colour. In such seasons, no matter how suitable the houses or pits may be, the plants grow weakly. In such circumstances the best and safest plan is to sow at intervals to keep up a succession of healthy plants to take the place of those which fail. Their wants in the early stages are small, nevertheless Melons in winter need careful attention, and if this cannot be given early they are best left alone. Their requirements are a steady bottom heat of 80 degrees and a temperature ranging from 66 to 70 at night, 75 to 80 by day, a moderate amount of moisture, a little fresh air, and a sweet, clean house. The soil should consist of a fairly heavy loam, lightened by the addition of lime-rubble and a little charcoal; it should be made firm in planting. Although Melons in summer need an abundant supply of water, at this early season the roots require very careful watering. The treatment of Melons grown as cordons is as simple as in the case of the Tomato: all the stem laterals should be removed from the seed leaf to the first wire, and the shoots pinched at the first leaf onward until the fruits appear in plenty. Attend to the pollinating of the flowers as they appear, endeavouring to have as many fruits as possible to set at one time, so that the required number may grow with uniformity.

FIGS.—If the temperatures given in the calendar of January 29 have not been relaxed, the foliage will now be fully developed, and the young fruits swelling freely. It is a common practice to allow the most fertile trees to carry all the fruits they show. This is, however, a mistake. Judicious thinning should be done before they come into flower. By this means, Figs, like Brown Turkey, one of the most prolific and best forcing sorts, may be fed up sufficiently to ripen two good crops of fruits. Feeding is a very important matter, as it is impossible for trees growing in pots, or with a restricted root-run, to mature good crops of fruit without its aid. From the setting of the fruit to its attainment of full size is the proper time to feed with weak diluted liquid and other stimulants, gradually increasing in strength as the fruits increase in growth. Succession houses should be closed according to requirements, where attention to watering, temperatures, thinning, and regulating the growths should be given, as recommended for the earlier trees.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C. Editors and Publisher. — Our Correspondents would oblige by delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, FEBRUARY 22 —
Roy. Hort. Soc. Com. meet. (Lecture at 3 p.m.)

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.4.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, February 17 (10 a.m.): Bar. 29.85; Temp. 46°. Weather—Sunny.

SALES FOR THE ENSUING WEEK

MONDAY, WEDNESDAY AND FRIDAY —
Hardy Bulbs and Plants at 12, Herbaceous Plants, Shrubs, Roses, etc., at 1.30, by Protheroe and Morris, 67 and 68, Cheapside.

MONDAY AND WEDNESDAY —
Rose Trees, Shrubs, Perennials, Bulbs, etc., at Stevens' Rooms, 38, King Street, Covent Garden.

TUESDAY AND WEDNESDAY —
Nursery Stock at Ottershaw Nurseries, Chertsey, by order of Messrs. Fletcher Bros., by Protheroe and Morris, at 11.30.

WEDNESDAY —
Palms, Flowering Plants, Bays, etc., at 1.30; 820 cases, Japanese Liliums, at 3, by Protheroe and Morris, at 67 and 68, Cheapside.

THURSDAY AND FRIDAY —
Nursery Stock at The Common Nursery, Richmond, Surrey, by order of Mr. L. R. Russell, by Protheroe and Morris, at 12.

THURSDAY —
Special sale of Roses, at 1, by Protheroe and Morris, at 67 and 68, Cheapside.

FRIDAY —
Established Orchids, by Protheroe and Morris, at 1.

First and the Plants' Awakening.

Gardeners who have remarked—and who in the South of England has not!—the prematureness of this year's spring flowers and foliage, have been led to surmise that the frost of a few weeks ago is responsible for this precocity of growth. We think that there is no doubt of the truth of this surmise; but when it comes to propounding a simple explanation of the manner in which frost produces this forcing effect, we find ourselves in no small difficulty. For whereas there are many striking and well-known facts which point to the conclusion that frost does assist in releasing plants from the lethargic state in which they pass the winter, science has not yet succeeded in explaining how frost acts to bring about this result. As Mr. Evans points out in his interesting communication on page 106, gardeners actually make use of frost as an aid to sundry forcing operations. Rhubarb, for example, "forces" better if the roots have been exposed for a week or two to hard weather. The rapidity of growth of retarded bulbs of Lily-of-the-Valley is well known and remarkable. Seeds of many kinds germinate far more rapidly if they have been "frosted."

Much experimental work has been done of recent years on the Continent and in America with the object of discovering practicable means of forcing plants to come out of their resting state, and to develop and blossom before their proper season. Among the means which have

proved effective are: Etherisation, warm baths (submerging the shoots for some hours in tepid water), injecting drops of water into the stem beneath a bud, watering the plants with a weak solution of nutritive salts (nitrates, phosphates and salts of potash), drying, keeping plants in darkness, and exposing the plants to frost. In the case of many plants it has been found possible to awaken them only by a combination of several of these methods. For example, it has been shown that to quicken the Maple into growth in December both drying and etherisation must be employed. If shoots of the Maple are dried, by means of a current of dry air, for either one or three days and then etherised, only the flower buds open, if they are dried for four days and etherised only the leaf-buds open; but if dried for two days and etherised neither leaf- nor flower-buds open.

It seems reasonable to conclude from such facts as these that the resting state of plants in winter is a complex business, and that this state may be disturbed and growth awakened by attacking it at several different points.

Let us endeavour to form a mental picture of the conditions which obtain in a plant in its state of so-called winter rest! There is reason to believe that in the resting state the living protoplasm of each cell forms a resistant outer layer or skin, through which water and gases pass with great difficulty, if at all. In this condition the protoplasm is said to be impermeable. There is also reason to believe that owing to the layers of cork in the stem, carbon dioxide, produced by the cells themselves when they were finishing off their active life in autumn, is imprisoned in the spaces between the cells of the deep tissues, and acts as a narcotic: drugging the tissues as it were. And, furthermore, there is ground for the belief that this same carbon dioxide prevents the ferment or enzyme, diastase, from doing its normal work of changing solid starch into soluble sugar, and if it exert this paralysing power on this enzyme, may it not also exercise a like effect on other enzymes, the activity of which is necessary for the growth of the tissues? In accepting these statements we must picture the cells of a dormant plant as cut off from water supplies by reason of the impermeable outer layer of protoplasm, as drugged by the heavy charge of carbon dioxide in and around the tissues, and as starved by lack of soluble food-material such as sugar and other substances. Anything which tends to break down one of these barriers to activity may aid in awakening the plant, but if several of them can be broken down escape from winter imprisonment is more probable.

Now, it is well known that a low temperature renders the outer layer of the cell's protoplasm more permeable. For example, in a severe frost water escapes from the cells into the surrounding spaces, and its lodgment in these spaces may be detected by the rich green colour that frosted leaves assume. Furthermore, as is pointed out by Mr. Evans, when the temperature falls, starch undergoes a conver-

sion into sugar, as may be inferred from the fact of frosted Potatoes having a sweet taste. Hence we must conclude that a falling temperature favours the action of diastase in producing sugar from starch. But the presence of sugar means that supplies of food are available, and the loss of permeability of the protoplasm means that that food may pass into the cell. Both these conditions are favourable to growth, so if the plant can throw off the drugged lethargy produced by the self-generated poison gas (carbon dioxide), it is free to resume active life and growth. Probably with the loss of impermeability (water- and air-tightness) of the outer layer of the protoplasm, the carbon dioxide imprisoned in the cell escapes, and thus the cell is quit of the anaesthetic action of that gas.

As will be judged from the foregoing, the problem is complex and difficult, and cannot be set forth in simple terms. Yet we gardeners are a patient folk, and we take with gratitude the partial explanations which the men of science offer us. In this case, though the explanations are incomplete and not altogether free from obscurity, we may see—as in a glass darkly something of the nature of the struggle whereby the plant escapes from the grip of winter, and something of the way in which a touch of frost helps it out of its prison.

AMERICAN VOLUNTEER FOR FARM EMPLOYMENT IN BRITAIN.—The cry of the British farmer has been heard in America, and the following letter from a correspondent shows that there is at least one who is ready to brave the seas and come to his assistance. The communication is printed without alteration, in case some reader may be induced to provide the applicant with the opportunity of "helping out" he is anxious of obtaining:—"The writer is fifty years of age, five feet five inches in height, thirty-six chest; in most excellent health. He has been farming for himself or others for the past six years; previously was engaged in business in New York City. For the past year he has had charge of a 20-acre country estate at Madison, Conn. His knowledge of farming is far from being complete. His knowledge of floriculture quite limited. He knows much more theoretically than practically. However, he has managed to operate a 90-acre place for himself (specialising in fruit, butter, eggs, and honey), with a fair degree of efficiency and success, and he has had charge of dairy and poultry on a 200-acre farm. The Madison situation afforded him some opportunity also in landscape work. He is active, careful, inventive, resourceful, systematic, artistic. He knows how to direct the labour of others, both on farm and in office and factory. He is a native of Connecticut, but was born of English parents—his father from Hants, his mother from Gloucestershire. He is and has been from youth a total abstainer. The reported lack of agricultural labour in Britain due to the war inspires him with a desire to 'help out.' He addresses you in the hope that you will advise him as to the wisdom of crossing the ocean with that end in view. He has none too much money and could not afford to take the journey fruitlessly. Could he secure employment?"

LOCH LOMOND PARK, GLASGOW.—The full development of the new Loch Lomond Park, acquired for the Corporation of Glasgow, will be delayed for the present on account of the war.

WAR ITEM.—French horticulture is valiantly bearing its part in the great European struggle. We learn that out of 500 old pupils of the Versailles School of Horticulture about 60 have been wounded and another 60 have either been killed or are reported as missing.

RUBBER ONIONS.—The news that a consignment of rubber sought to gain entrance into Germany disguised as Onions does credit to the ingenuity of the contrabandists. Having regard to the physical properties of rubber it is reasonable to suppose that they were spring Onions!

BEGONIA MRS. J. A. PETERSON.—This fine hybrid Begonia is becoming more and more popular, and is generally regarded as a notable acquisition to the ranks of Begonias. Mr. PETERSON, the raiser and introducer of the plant, is to be congratulated on the place it has already taken in the estimation of the public. The colour of the flowers, richer even than those of Gloire de Lorraine, the ruddy foliage and perfect habit of

able in Sweden. Reports from Germany state that stocks of seed of Spinach, Carrot, Brassicas, Onion, Cucumber, and Peas are very scarce. Moreover, it appears that Germany has prohibited the export of vegetable seeds. We hope to publish shortly a statement on the subject of the supply of seeds in its bearing on this country.

DRUG-PRODUCTION IN QUEENSLAND. The Board of Agriculture of the Colony of Queensland is making experiments to ascertain whether certain drugs, of which a shortage is being felt owing to the war, cannot be grown in the Colony. A scheme is being prepared, and ample funds will be forthcoming. The experiments will be carried out on practical lines in conjunction with the hospital. In the first instance, seeds and plants will be imported and distributed to the various schools to be grown in the school gardens, choice being made of schools in districts most suited to the cultivation of the particular plants. The products from the gardens

throughout the tablelands of New South Wales where it bears a number of different popular names. South Australian and Tasmanian localities of Mueller and Benthams belong to other species. According to MAIDEN, there are three distinct species bearing the name Stuartiana in botanical literature, and the one adopted by him is the third of the series.

VALUE OF HOME-GROWN TIMBER.—The demand for timber of all kinds has resulted in greatly enhanced prices, as may be seen from the returns published below for newly-felled timber and smallwood on an estate in Sussex, three miles from a railway station. The highway is good and the rides are average, but this advantage is discounted by the hilly nature of the woods. Ash is the most valuable English wood, and the best quality realises 6s. per foot. Scots Pine is in great request, and long, clean stems sold for 1s. per foot, and as there is a great demand by match makers for this wood the price will undoubtedly greatly increase



FIG. 39. "NOTES FROM A COLSWOLD GARDEN." COLBORNE, THE RESIDENCE OF MR. R. L. LEWIS, F.R.S. (See p. 99.)

growth, all tend to make it an ideal plant for winter flowering. It received an award of merit from the Royal Horticultural Society on December 21 last. The parents are said to be Gloire de Lorraine and Gloire de Sceaux, of which it is a worthy offspring.

POISONOUS PLANTS.—We learn from the *Tropical Agriculturist* that in Ceylon there exists in the island a curious local belief concerning *Gloriosa superba*, viz., that the poisonous properties of the plant are transferred from the aerial to the subterranean parts of the plants during the day, and vice versa at night time, so that pasturing animals may eat the foliage with impunity in daylight, and animals like the pig, which dig for their food, may consume the tubers after dark without any evil effects.

HOME-GROWN SEED.—*The Seed World* (Chicago, Vol. II., No. 17) draws attention to a movement in Sweden to obtain assistance from the Government of that country in order to establish vegetable seed stations. It appears that various kinds of vegetable seeds are unobtain-

able in Sweden. Reports from Germany state that stocks of seed of Spinach, Carrot, Brassicas, Onion, Cucumber, and Peas are very scarce. Moreover, it appears that Germany has prohibited the export of vegetable seeds. We hope to publish shortly a statement on the subject of the supply of seeds in its bearing on this country.

THE GENUS EUCALYPTUS.—The lately issued 24th part of J. H. MAIDEN'S *Critical Revision of the Genus Eucalyptus*, plates 100 to 103, treats of five species, bringing the total number now described and figured up to 132. Four out of the five species figured in this part were first described by MAIDEN, and all are large trees attaining a height of 100 feet or more, and restricted to Eastern Australia. The fifth species, *E. Stuartiana*, as limited by MAIDEN, is a somewhat difficult one, with a copious synonymy. It ranges from North-Eastern Victoria to South-Eastern Queensland, and it is very abundant

before long. The best grade Oak is worth 2s. per foot, and second quality Oak from 1s. 6d. to 1s. 9d. per foot. Beech varies from 1s. for the best to 9d. per foot for second-rate trunks. Elm is not largely grown, but it realises 9d. per foot, whilst the best Larch is bought readily at 1s. 6d. per foot. Sycamore realises 9d., and Spruce 6d. per foot, if of fair quality. A ton of Cordwood on rail fetches 14s., and as Cordwood is green and heavy a ton does not bulk largely. There is also a great demand for pit props, and the following prices are paid per 100 feet run on rail: 5 inches at top, 4 feet long, 6s.; 4 inches at top, 5 feet long, 8s. 6d.; 4½ inches at top, 5 feet long, 9s.; 5 inches at top, 6 feet 6 inches long, 14s.; 5½ inches at top, 6 feet 6 inches long, 16s.; 6 inches at top, 6 feet 6 inches long, 19s. The demand for Hazel and Oak sticks, which are used for military purposes, is greater than the supply, and 5s. 6d. per 100 is paid for sticks which measure about 1 inch at the base and not less than ½ inch at the top.

FOREIGN CORRESPONDENCE.

NOTES FROM PARIS.

SINCE you have been good enough to continue to keep the readers of the *Gardeners' Chronicle* up to date in matters relating to French horticulturists during the war, I shall be glad if you will inform your readers that the French National Horticultural Society has decided to hold a general spring exhibition. This exhibition will take place in tents at Cours la Reine from May 31 to June 5. The takings will be devoted to the aid of horticulturists in the invaded regions, and to societies which are succouring the wounded.

The resumption of work, and the fact that the ordinary meetings take place each month, encourage the hope that the exhibition may be a success, and will cause a revival of the taste for flowers and fruits among amateurs. Indeed, a general revival seems to be taking place in horticultural affairs, the seedsmen are at the moment very busy, and buyers of nursery plants are fairly numerous. The florists' shops have regained, especially in populous centres, their pre-war aspect.

But, alas! the empty spaces are many, on account of the numbers of horticulturists who have fallen already on the field of honour, and the general mobilisation which has called to the Colours all the available men from 19 to 45 years of age. Thus the greatest difficulty is experienced in carrying on the work of gardening, and it is only possible to do so by means of the help of women and children.

In spite of all this, general confidence reigns: everyone is sure of final victory, though it will certainly cost dear. Horticulturists look forward to a new era of tranquillity and prosperity after peace is declared.

Our sons neglect nothing to secure this end: they show in the trenches and during the incessant battles which take place the greatest courage. Mention in despatches and the War Cross have lately been won by the son of M. Opoix, head gardener of the Luxembourg, by M. Gravereau, by Sergeant du Génie Rijard, the son-in-law of our friend, G. Schneider, of London; and, last week, M. René Moser, of Versailles, was awarded, in consequence of his acts of bravery, in performing which he was twice wounded, the Military Medal and the War Cross, while his brother, Marcel, has been made captain in the 17th Regiment of Territorial Infantry.

My son George, who was at the time of the International Exhibition in London the winner of the Veitch Memorial Cup, is at present lieutenant in the 13th Regiment of Artillery, commanding the Sanitary Section, Automobile No. 3. He has obtained the War Cross, with the following mention in a despatch:—

"Was successful, by his gift for organisation, in performing, in spite of great difficulties and under repeated bombardments, excellent work with the transports of the Sanitary Section, American No. 3, which he employed as near the front as possible during the time between December 21, 1915, and January 5, 1916." J. Truffaut, Versailles, Paris.

PUBLICATIONS RECEIVED. *List of Seeds Collected during the Year 1915 in the Garden at La Mortola.* (Ventimiglia, Italy: Supt. of La Mortola Gardens).—*Bulletin No. 344, U.S. Department of Agriculture (Studies on the Biology of the Arizona Wild Cotton Weevil.)* By B. R. Coad. (Washington, D.C.: Government Printing Office.) Price 5 cents.—*Plantae Wilsonianae*, Vol. II., Part 2. Edited by C. S. Sargent. (Cambridge, Mass.: The University Press.) Price \$2.50.—*British Journal Photographic Almanac*, 1916. (London: H. Greenwood & Co., Ltd.) Price 1s. net.)

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

SULPHATE OF AMMONIA FOR FARM CROPS.

YOU do well to call attention to the extended use of sulphate of ammonia in the place of nitrate of soda (p. 91) for farm crops. I know there are many gardeners who manage a small home farm in addition to the garden, some of whom may not have had experience in the use of sulphate of ammonia on cereals. It is well known that nitrate of soda is the quickest acting of all stimulants, and is the best antidote for an attack of wireworm in spring-sown Oats when sown on ley ground, as they are when grass or Clover is broken up, as we are so often told now to do. Directly the flag or leaf of the Oat is seen to turn yellow it is certain that wireworm is the cause. A top-dressing of 1 cwt. of nitrate of soda will immediately hasten the growth of the Oat plant, enabling it to spurt out of the way of the wireworm. If another hundredweight is added in two weeks' time the Oat crop will very often be increased several sacks per acre, not counting the increase in straw bulk. Sulphate of ammonia will do precisely the same thing if a trifle more is applied per acre. The great point to guard against in the use of these quick-acting stimulants is procrastination in application. So many postpone the remedy and resort to rolling the crops under the impression that in extra firm soil wireworm cannot spread. This is the greatest myth possible. Many farmers are loath to expend a little in a sure remedy, postpone the attack until "too late," and then bemoan their fate in a poor crop. Sulphate of ammonia is a valuable aid to green crops, as Mangold, Swedes, and Turnips, not forgetting Potatoes, and is often recommended to stimulate a thin Wheat plant in the spring. My experience leads me to say that, while it changes the pale green tint of the blade into a dense green colour, it has a deleterious effect upon the Wheat itself, creating what is known as "blight," apparently checking the filling of the corn with gluten sufficient to make a plump, "strong" sample. My experience of this was last year on a thin soil overlying chalk. E. Molyneux.

NOMENCLATURE OF APPLES. Although there has been a vast improvement of late years in the spelling of names and the reduction of synonyms, there still seems to be a difficulty in many quarters with regard to the spelling of such names as Gascoyne's Scarlet, Potts's Seedling Apples, Fondante de Thirriot, Marguerite Marillat Pears, and Count Althann's Gage Plum. And turning to synonyms, how frequently one sees Early Victoria given as the name of an Apple which was known as Emmette Early long before it was sent up to the R.H.S. under the name of Early Victoria. Even that otherwise recognised authority, the R.H.S., gives in the list of Apples (Rules for Judging) Spencer's Favourite, or Queen Caroline, whereas the order should be reversed. I have long known that this Apple was raised by Mr. Brown, and named by him Queen Caroline, and if confirmation be needed I quote in condensed form from *The Midland Florist* of 1850:—"This Apple was raised by my father, Mr. Timothy Brown, nurseryman, Measham, near Ashby-de-la-Zouch; it was named at the time when that unfortunate queen's name was so prominently before the public. Mr. John Spencer, of Ad-bolton, procured stocks from Mr. Wm. Wood, of Ashby-de-la-Zouch, and renamed it. Later on it was again renamed Brown's Seedling. (Signed) Timothy Brown." The same authority states that the Apple known as Dummelow's Seedling, Normanton Wonder, Duke of Wellington, and still called Wellington by many southern growers, was raised by Mr. Richard Dummelow, of Hop John's Hill, Swepston, Leicestershire. Mr. Hatfield, of Normanton-on-Sour, obtained some trees, and being a market gardener sold his fruit under the name of Normanton Wonder. Where the "Wellington" name came from no one knows. In contradiction to the above, I have before me a letter from the Rev. J. R. Dummelow, Titcombe Vicarage, Bruton, Somerset, in which he says, "You will know my name in connection with the famous seedling (Apple) called after my grandfather. Now we fruit

growers have not the least wish to vie with the Kew authorities in searching out names long since forgotten, or rather generally speaking never known, and substituting these for names with which we have all been familiar since childhood; we set a bound to the antiquity of the sources from which we obtain information, but 1850 is a comparatively recent date, and I think we might go back as far as that to accord Mr. Brown his due in raising Queen Caroline. Emmette Early I myself journeyed to verify, and the R.H.S. have accepted this name as correct. Mr. Dummelow's letter is dated 1911. Would it be asking too much to have another "m" inserted in the name of the Apple raised by his grandfather, and thus give him recognition after the years that have passed? A. H. Pearson, Lowdham.

FROSTS AND VEGETATION.—The answer to Mr. R. P. Brotherton's question (p. 66): "Can it be that frost has a hastening influence on vegetation?" should, I feel convinced, be in the affirmative. About the unusual outburst of bloom since the advent of the New Year, in this locality, there can be no doubt; it has been most marked, both as regards the number of species in flower and also the wealth of bloom on some of those species (e.g., *Pulmonaria angustifolia* azurea, *Saxifraga apiculata*, and *S. Boydii* alba). The wet weather of December and early January was of the sort that militates against early flowering; and though the latter half of this month has been mild and balmy, yet such weather often occurs here in January without bringing such a crop of early flowers. Unless I am mistaken it is to the dry, cold weather in November, with one or two frosty spells of unusual severity, that we owe these early flowers. That the freezing of certain plants has the effect of stimulating sudden growth when the plants are introduced into proper growing conditions, is, of course, no longer theory, and is turned to practical account. Well-known cases are the use of "retarded" (i.e., frozen) crowns of the Lily-of-the-valley for forcing; and the practice of lifting Rhubarb roots and leaving them exposed to the weather before forcing, success in this case being the more complete and certain if a drying east wind or, better still, a sharp snap of frost occurs during this time of exposure. The check of lifting a growing plant is a factor that enters into the question, as well as the check occasioned by frost; as when forcing Swedes, for the purpose of using the blanched leaves, and leaf-stems as a substitute for Seakale, roots that have been harvested and stored force well, but growing roots just lifted do not succeed. Suggestions from the agricultural chemist as to what change in the plant the frost sets up, and that leads to growth, would be interesting. I take it to be a chemical question, akin to the fact that frost imparts a sweet taste to Potatoes; such sweetening being due to the transformation of starch into sugar, a change which in the ordinary course of nature is the usual preliminary to fresh growth. The following is a list of plants that were in flower out-of-doors here in January, in a site that is by no means a specially early one. It is not often that *Saxifraga apiculata*, *S. Boydii* alba and *S. Burseriana* Gloria are past their best, or *Forsythia suspensa*, *Rhododendron praecox* and *Muscari azureum* well in flower, by the end of January. It is interesting to note that the first two *Pulmonarias* named in the following list were well out before any others in a representative collection:—*Helleborus niger*, *H. orientalis* vars; *Erica mediterranea*, *E. m. hybrida*, *E. arborea*, *E. alpina*, *E. carnea* and *E. c. alba*; *Coronilla glauca*; *Garrya elliptica*; *Petasites fragrans*; *Saxifraga apiculata*, *S. Boydii* alba, *S. Burseriana*, *S. B. Gloria*, *S. Elizabethae*, *S. sancta*, *S. Cherry Trees*, *S. Paulinae*, *S. Salomonii*, and some of *Megasea* section; *Hepaticas*; *Daphne Mezereum* and its variety *album*; *Arabis rosea*; *Lithospermum prostratum*; *Eranthis hyemalis*; *Polyanthuses*; *Daisy Dresden China*; *Phlox G. F. Wilson*; seedling *Viola*; *Jasminum nudiflorum*; *Salix pruinosus*; *Pulmonarias angustifolia* azurea, rubra, alba and rosea; *Anemone blanda*; *Draba scabra*; *Omphalodes verna*; *Muscari azureum* and *Heavenly Blue*; *Polygala Chamæ-*

buxus, var. *purpurea*; *Soldanella alpina*; *Berberis aquifolia*; *Cydonia candida*; *Primula cashmiriana*; *Anchusa myosotidiflora*; *Aubrieta Wallacei*; *Corydalis cheilanthesifolia*, *C. lutea*; *Forsythia suspensa*; *Rhododendron praecox*; and *Synthlipsis reniformis*. *Harold Evans, Llanishen, Cardiff.*

GARDEN ECONOMIES.—Soon the long-established custom will be in full swing, and men, each astride a row of infantile vegetation, will be busy uprooting by the hundred Onions, Carrots, and other vegetables devoted to premature destruction. Thick sowing may be allowed in early crops, but for later crops I am doubtful if any of us sow as thinly in the rows as we safely might. Transplanting might be adopted with the best results at a lessened expenditure of labour for several crops. I always transplant Onions, Parsley, Lettuces and Endive at least 1 foot apart. I do not invariably transplant Cauliflower, because here it succeeds better when sown where it is to grow, but three seeds dropped at each station produce enough plants. There is a deeply rooted belief that the Brassicas succeed better when pricked out and finally transplanted with balls of soil. This, it is clear, cannot be effected without the expenditure of considerable labour, compared with that involved in planting from the seed-bed. It is really largely a question of thin seeding and planting out before the seedlings have become drawn. Planting at the proper stage is advantageous in two ways. It saves time, inasmuch as it keeps work in hand. Every gardener ought to be so strongly impressed with the importance of this that he should not feel at ease when it happens that particular jobs are delayed. In these special times it is far better to let unimportant work stand over altogether than to heap up arrears in essentials, with their consequent worries. The other way in which catching crops at the proper stage is seen to advantage is in the behaviour of the crops themselves. A batch of plants transplanted correctly as to date and another batch delayed for ten days or a fortnight display such a diversity in appearance to the disadvantage of the latter that they might be taken to be separate crops. This, it may be noted, applies to gardening of every kind, and it was the principle on which the late Thomas Baines produced so rapidly splendid specimens of hard-wooded plants. An enormous amount of routine labour was dispensed with here last year in the keeping of borders and beds in the one item of supporting tall plants. Usually thousands of stakes are used, but in this instance only a few, to support Paeonies. It became evident that to flower-garden as in previous years would mean that out-of-door work as a whole would become dislocated, so no tall plants were set in the flower garden, and the herbaceous things that called for support, including Hollyhocks and Delphiniums, were cut before arriving at the stage where stacking became imperative. I expected a serious deficiency in the amount of bloom, but the plants pulled themselves together and produced such an abundance of side shoots and new growths as to compensate for those lost. The cutting over was quickly effected by means of hedge shears, and the clippings being soft and the plants almost touching each other, they were, with a few exceptions, left to wither in obscurity. When autumn came there was again a great saving in cleaning up, inasmuch as the withering material could be cut over without the usual labour incurred in first removing ties and stakes. I, like many more, hoped that we should return this year to normal conditions, but we have to face the future with the expectation of a staff still further reduced. In the flower garden (for I hope still to fill the beds), besides Dahlias, Begonias, Violas, Pentstemons, and such easily produced things as *Lobelia* and *Ageratum*, such dwarf hardy annuals will be used as *Saponaria calabrica* and its white variety, *Silene Armeria*, *Godetia Schaminii* fl. pl., *Salvia Hornum*, *Mari-golds*, *Cornflower*, *Nigella Miss Jekyll*, *Alonsoas*, and *Prince's Feather*. On poor soils Dwarf Nasturtiums are splendid. I furnished a long border with a lovely variety last year; but though the ground had not been dug, the plants grew too strongly to be floriferous. It is worth keeping in mind that a reduction in the number

of varieties of all kinds of garden plants tends to the facility of working a garden. The custom of heaping up varieties has, indeed, nothing to recommend it, provided the cream be skimmed off the weak stuff, and enough of the best grown. *R. P. Brotherston.*

SOCIETIES.

SCOTTISH HORTICULTURAL.

FEBRUARY 1.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date. The president, Mr. W. G. Pirie, delivered the opening address for the session, taking as his subject "Progress in Horticulture," and he dealt chiefly with the revolution which had been brought about in gardening by the great improvement of hardy herbaceous plants, the Rose, and florists' flowers, like the Sweet Pea, Antirrhinum and Carnation, and to the great advances which had been made in the general knowledge of winter washes and sprays for fruit trees, and in the use of artificial manures. In dealing with the teaching of horticulture, he emphasised the advantages which young gardeners now enjoyed as compared with former generations in the acquirement of a thorough knowledge of the scientific side of their work, and paid a tribute to the good work which the horticultural societies were doing in promoting lectures and discussions among the members, and to the great service which the Royal Horticultural Society had rendered to the country in the past in botanical exploration.

The exhibits were *Primula stellata* varieties Lord Roberts and Coral Pink, and two seedlings; *P. malacoides* and *P. m. alba*; and *Chrysanthemum Red Chief*, from the Edinburgh Public Parks Department. This last-named plant was awarded a Cultural Certificate.

ELSTREE HORTICULTURAL.

FEBRUARY 9.—The annual meeting of this Society was held on the 9th inst. at the Church Room, Elstree. There was a good attendance, and Mr. E. Beckett presided. Although the day of the show last year was very wet, the report of the Society showed that it was in a flourishing condition, and had a cash balance of £43 3s.

The report and statement of accounts were unanimously adopted. The Society granted a donation of £10 10s. to the blind soldiers, St. Dunstan's, in the year 1915.

The chairman appealed to the members to stand loyally by the Society at this difficult time, and to do their best, by introducing new members and in every other possible way, to enable the Society to continue and extend its activities.

It was decided to hold the annual summer show on Wednesday, July 12, 1916. The following officers were then elected:—President, the Hon. Vicary Gibbs; treasurer, the Rev. A. R. T. Eales; hon. secretary, Mr. W. J. Pritchard.

ROYAL SCOTTISH ARBORICULTURAL.

FEBRUARY 5.—The annual business meeting of the Royal Scottish Arboricultural Society was held at 5, St. Andrew Square, Edinburgh, on this date. Sir Andrew Agnew, Bart., of Lochmaw, the senior vice-president, in the absence of the president, Colonel Stirling of Keir, who is on active service, occupied the chair, and the Board of Agriculture for Scotland was represented by Mr. J. D. Sutherland.

The report by the Council stated that the Society's Roll of Honour to date numbered 181, eight of whom had been killed in action or fatally wounded. The membership of the Society stood at 1,380, a decrease of 50 on the previous year. The Council had been in communication with the Government regarding the employment in afforestation and small holdings of soldiers and sailors returning from the war, and the Secretary for Scotland had replied that at present no actual scheme had been submitted which would provide for any substantial number of returned soldiers and sailors on a scale of expenditure which in the present state of the

national finances was likely to be sanctioned by the Treasury. The financial statement showed that the income was £603, and that the funds amounted to £1,579.

Sir Andrew Agnew was unanimously elected president. In returning thanks for the honour conferred upon him, Sir Andrew expressed the hope that during the year of his office they would see some definite advance in forestry. The war had brought the question into greater prominence, and we were realising to what an extent we had been dependent on foreign timber, and how inadequate were our home supplies. The demand for home-grown timber was now so great that it could only be met by drawing on our capital. Exactly the same thing occurred in the Napoleonic wars a hundred years ago, when many of our old Scots Pine forests were cut down. Some of these had sprung up again by natural regeneration, but this was unlikely to occur in the case of those being cut down now, and it was hoped that the Government would be induced thereby to pay more attention to forestry than it had done in the past. The State had still to prove that it was a genuine convert to forestry, and he did not think it could prove it better than by starting the work of planting itself. Mr. Sutherland did not think that the question of afforestation should be pressed too strongly at the present time. It meant a very heavy expenditure, and money was not easily found at present. Sir John Stirling-Maxwell said he thought the country would be more than foolish if it did not take steps at the earliest possible moment to put itself right regarding supplies of timber. Proper areas should now be marked down and preliminary arrangements made so that at short notice the work could be undertaken.

Obituary.

CANON ELLACOMBE. (see last issue, p. 97).

—The death of Canon Ellacombe, of Bilton, on February 7, at the age of 94, will be deeply lamented by all who knew him, for I can truly say that during a friendship of 40 years I never heard an ill word said of him by anyone, or of anyone by himself, and his friends were very many. However far I look back to find a clergyman who was his equal as a gardener or as a writer on horticultural subjects, I cannot think of one, and certainly there has been no private garden large or small which during so long a period has afforded so much pleasure and interest to so many people as the one at Bilton, in which I have spent many happy hours with a man whose like we shall not see again. One of its features was that its owner had no speciality though he had the best of everything that will live in the open air; he was equally fond of shrubs, herbaceous plants, and bulbs, which were grown without much order wherever space could be found to plant them. The want of space was the chief reason why there were not more; but in the compass of perhaps half an acre, including the vegetable garden, it is safe to say that so great a variety of plants has never been grown elsewhere. The soil and climate were no doubt very favourable for everything except alpine and plants that will not endure lime; but as they were often too crowded, and their owner was continually dividing them to give away to all comers, as the soil got little help in the way of manure, peat, sand, or fresh loam, it had in time become somewhat sick, and a great many losses took place among plants that require more cultivation than Canon Ellacombe could or would give them. For with all his knowledge, experience, and skill, he was always rather rough and ready in his methods; he would move plants at all seasons, and though he propagated largely by cuttings, mainly in order to give them away, a great many of the plants grew rather by chance than owing to any special treatment.

There was not, and never will be, any man who has given away so freely to all deserving visitors; for as he said on page 293 of *J. Gloucestershire Garden*, "I was long ago taught and have always held that it is impossible to get or keep a large collection, except by constant liberality

in giving; there is that scattereth and yet increaseth, was Solomon's experience, and it certainly is so with gardening." Nothing pleased him more than to go round his garden with an old friend fond of plants, always taking the various beds and borders in the same order, always as anxious to get knowledge as he was ready to impart it, always able to tell something new as to the origin, correct name, or cultural requirements, of innumerable rarities. And though when I last had this pleasure in the autumn of 1915, I could see that his memory and strength were at last failing him, he was just as hospitable, just as courteous, and just as anxious to give me good things, both at lunch and from the garden, as when I first went round forty years before.

Of his personality I need not say much: a tall figure, slight stoop, and grey beard were combined with an active mind and body until he was long past 70. He was fond of society and travel, and was constantly away on short visits to his innumerable friends. I well re-

form of the Deciduous Cypress, raised by myself from a seed brought from Mexico by Mr. Marlborough Pryor; I hope that Canon Ellacombe's successors and the churchwardens will protect this tree during severe winters, as the only other specimen that I know of similar origin in Great Britain is at Tregothnan, in Cornwall.

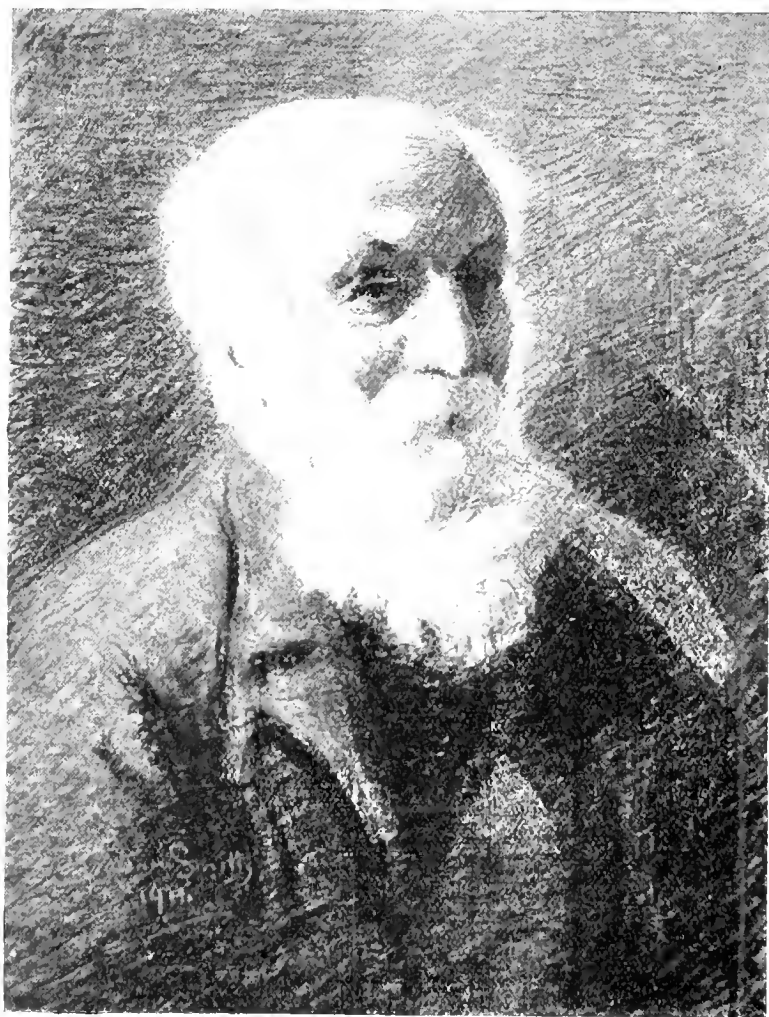
Ellacombe was a ready writer, and had the gift of imparting knowledge in a way that made his writings as popular as they are instructive. He had a good knowledge of literature as well as a select library, and used both so well that probably the most generally known and successful of his works was *The Plant Lore and Garden Craft of Shakespeare*, which was first printed in the *Garden* newspaper between March and September, 1877, and reprinted for the author by Pollard of Exeter in 1878. This book is crammed with classical, botanical, and literary references to all the plants that Shakespeare mentioned, and as Ellacombe knew his Parkinson and his Gerard as well as he did his Shakespeare and his garden, his work is not likely to

and have come to the conclusion that I know nothing whatever about flowers." But he never paraded his botanical knowledge and, as he tells us in the same book when speculating on the possible use of the nectary in *Hellebores* and *Eranthis*, "As I walk round my garden I read in every plant my own ignorance of its real history." A list of plants grown at Bitton, kindly lent to me by his daughter, Mrs. Janson, contains nearly 3,000 names of species and varieties which had been cultivated there at some time during the last fifty years. At the end of this is a list of ten plants figured in the *Botanical Magazine* from this source, of which *Rosa Banksiae*, t. 7,171, and *Rosa incarnata*, t. 7,035, are perhaps the most interesting, though I shall always look on *Yucca rupicola*, t. 7,172, which I have succeeded in propagating, as the most valuable plant that I owe to Canon Ellacombe's liberality. In this list, however, I cannot find the name of a very rare and beautiful Rose which Mr. Bowles tells us he was taught by Canon Ellacombe to regard as the parent of the Tea Roses and to call *Rosa indica fragrans*. Miss Willmott figures this in her *Monograph* as *Rosa chinensis grandiflora*, and says that it was first cultivated and distributed from Bitton. The 107th volume of the *Botanical Magazine* was dedicated to Canon Ellacombe by Sir Joseph Hooker in these words:—"Allow me when adding your name to the list of recipients of this modest tribute to record my high appreciation of the value of your venerable father's and your own intelligent interest and zeal in the introduction and cultivation of interesting, rare, and beautiful hardy plants, and your disinterested liberality in the distribution of them among horticulturists."

He was buried on February 10 in the family vault of the Ellacombes, who have been connected for upwards of a hundred years with the parish of Bitton, where his father held the living from 1835 to 1850. He leaves three daughters, all of whom are married, and two sons, who are abroad. *H. J. Elwes.*

JOHN GARLAND.—At Broadclyst, Devonshire, on the 7th inst., there passed away, at the age of 77, a gardener of the old school. Mr. Garland had been for 42 years head gardener at Killerton Park, near Exeter, first under the late Sir Thomas Acland, and afterwards under the present Sir Thomas, retiring from that position about ten or twelve years ago. There were few, if any, gardeners in the county of Devon better known as successful exhibitors or judges of fruit. It is worthy of note that Mr. Garland planted the first tree of *Doyenné du Comice* Pear grown in England. Under his management at Killerton many of the earlier introductions of *Coniferae*, sent home by William Lobb and distributed by James Veitch, of Exeter, first found an English home at Killerton. *Desfontainea spinosa*, *Lapageria*, many of the *Thuyas*, *Adiantum Farleyense*, and other plants which have enriched English gardens were cultivated at Killerton when not little known in this country. At a big show in the North of England, held 30 years ago, Mr. Garland secured the champion prize for vegetables open to all England. He was a specialist in Asparagus growing, and, indeed, a clever all-round gardener. He was a member of the Board of Guardians of one of the largest areas in Devonshire. Mr. Garland did much useful public work in a quiet way, and was a credit to the gardening profession. *A. H.*

H. W. WARD. Henry William Ward, whose death was announced in our last issue, was born in 1840 at Portarlinton, Ireland, where his ancestors had been engaged for generations in agricultural pursuits. At an early age he entered the gardens of Lord Portarlinton at Emo Park, and after some years removed to Scone Palace Gardens, Perthshire. Later he was appointed foreman in Lord Sydney's gardens at Frogmal, Chislehurst. Whilst serving in this capacity his commanding personality and abilities attracted the keen eye of Mr. John Lee, the famous Hammersmith nurseryman, who recommended him as head gardener to Lord Radnor at Longford Castle, Wiltshire, in succession to Mr. Penford. This was in 1871, and Ward remained at Longford for a quarter of a century. During his



THE LATE CANON ELLACOMBE.

member his staying at Colesborne about ten years ago in company with the late Sir Charles Strickland and the Earl of Ducie; their united ages came to about 240 years, and my mother, who was then nearly 80, declared that never in her life had she met three men together who seemed so happy, active and vigorous, and who enjoyed life so much at such an advanced age. This she attributed largely to their common love of horticulture. There is no space here to allude to his activities in other fields, but I must mention the church which he served faithfully for nearly 65 years, and which was restored during his father's and his own incumbency entirely by the hands of Bitton residents and workmen. The roof is, so far as I know, unique in being designed by himself, and constructed of American Pencil Cedar wood which he purchased from a ship wrecked in the Bristol Channel. In the churchyard is a young specimen of the Mexican

he improved on or superseded. Companions of this classic are the "Flowers of Chaucer, Spenser, and Milton," which appeared in the columns of the *Gardeners' Chronicle*.

In a *Gloucestershire Garden* is another book which came out at intervals in the *Guardian* during the years 1890-1893, and though it is a charming little book, written no doubt to encourage other country parsons to grow and take more interest in plants not often found in vicarage gardens, it does not cover so wide a field or go into so much detail as "Plants of Shakespeare," and does not mention many plants for which his garden was famous. Though Ellacombe knew a great deal about plants he did not pretend to be a botanist, and had no sympathy with the sort of botanist who, as he tells us in his *Gloucestershire Garden*, replied to a simple question about some flower, "I cannot tell you,

time in these famous gardens he brought himself into the foremost rank of British horticulturists by his great skill as a cultivator, and in the 'eighties, especially, his name was prominent at exhibitions all over the country. In Lord Radnor he found an employer with a great love for gardens, and it was their mutual pride not only to make Longford one of the show places of the country but for its produce to figure conspicuously and successfully at the exhibitions. Ward was not slow to make use of opportunity, and as the flower garden at Longford was of imposing proportions he made use of a great variety of plants for its embellishment, disregarding the fashions then in vogue. The improvement of the grounds by the forming of avenues, planting groups of ornamental trees, making borders of hardy ferns, and the erection of summer-houses went on until in the latter eighties they were enlarged by enclosing eighteen acres from the park. Two borders, each 100 yards long and three yards wide, were planted with hardy herbaceous flowers, and in many other respects Longford was brought up to date. Indoors he grew Orchids, and was very successful with Tuberose, Eucharis, Paneratiams, Richardias, Camellias, Oranges, Begonias and other exotics. But it was not for flowers that Ward gained his chief fame, for, although he must be remembered as one of the pioneers among Chrysanthemum exhibitors, being successful with incured as well as Japanese varieties, his forte was fruit-growing. Amongst the many medals and trophies he won were medals of the Royal Botanic Society for Pineapples, Strawberries and Black Grapes in 1872. The list of his successes, which we have before us, fills a large book, and, as showing how painstaking and methodical his work was, all the items are accurately recorded to the merest detail. In the early eighties he won many prizes at the R.H.S. shows, and there is an entry "during the years 1882 up to 1886 (inclusive) I was a frequent exhibitor of vegetables at the R.H.S. shows." At the famous Crystal Palace fruit shows he gained successes, where he entered in the more important classes, such as those for collections, Grapes, Peaches, Nectarines, Melons, Pineapples and Plums. Besides winning at the Metropolitan shows he gained many successes at such places as Southampton, Brighton, Taunton, Salisbury, Yeovil, Exeter, Bristol, Bath, Sherborne, Devizes, Trowbridge and Weston-super-Mare. In 1887, the year in which he wrote the calendar on "Plants under Glass" in these pages, he was awarded all the 1st prizes (excepting one) in the classes in which he entered at the Taunton Deane Show (see *Gard. Chron.*, September 3, 1887, p. 289). The way of the show bench is to the judicial board, and as a judge Ward's services were in frequent demand. During a period of nearly forty years he assisted to make the awards in the special prize classes at the Shropshire Horticultural Society's exhibitions at Shrewsbury. There were other sides to this versatile gardener's capabilities. No one knew better than he how to design a plant house and the materials and quantities required for such buildings. The vineries at Longford were rebuilt under his directions, and he was ever ready to place his knowledge and experience in such matters at the disposal of others.

The late Mr. Ward was a prolific writer. He contributed not only to the horticultural Press, but to papers and periodicals of many kinds. His books, *Flowers and Flower Culture*, *Potato Culture for the Million*, *The Book of the Peach*, *The Book of the Grape* and *My Gardener*, have sold widely. The last has been reissued in a second edition.

Mr. Ward settled at Lime House, Rayleigh, Essex, in 1896, as a market grower, specialising in Tomatoes, Cucumbers and flowers, principally Chrysanthemums. He retired in October, 1914, and the business is now carried on by his only surviving son, Charles Edward. Mr. and Mrs. Ward went to live with their only daughter, first at Leigh-on-Sea and latterly at Rayleigh, where he passed away on the 8th inst.

—With much regret I read of the death of this talented gardener. My first connection with him was in the years following 1890, when I met him as a strong opponent in

fruit and vegetable classes at the Royal Southampton show, at that time one of the most successful of provincial displays. Although such a strong opponent, the late Mr. Ward knew how to take a beating, and was at all times a thorough Englishman, most wishful to enlighten the inexperienced. As a writer, too, in argument, he embraced all the points that go to make an opponent worthy of contradiction. In private life he was sincere; his welcome was at all times exceptionally hearty. *E. Molyneux.*

M. VIVIAND MOREL.—News has just come to hand of the death of this well-known French horticulturist. Beginning life as a gardener, he was for a time the *sous-chef* at the Botanic Garden of the Parc Tête d'Or at Lyons. He was a great writer on horticulture, the author of a treatise on the Chrysanthemum, which ran through several editions, *L'art d'obtenir des variétés nouvelles en Horticulture*, and for thirty-six years the editor of the *Lyonn Horticulteur*. He was secretary general of the Association Horticole Lyonnaise, and president of the Société Botanique de Lyon. He was a corresponding member of the National Horticultural Society of France, and an officer of the Mérite Agricole.

DR. PAUL SORAUER.—We learn of the death of Dr. Paul Sorauer, Professor of Phytopathology at the University of Berlin. Deceased, who was 76 years of age, had been associated with Professor Hellriegel's researches about 45 years ago. Later on he became a director of the Phytopathological Institute of Proskau, whence he was called to Berlin. Dr. Sorauer chiefly devoted his studies to the diseases of fruit trees and garden plants. Among his publications, that treating on plant diseases (*Handbuch der Pflanzen-Krankheiten*) met with wide success.

CATHERINE HOLE.—On Sunday, the 13th inst., there passed away at the Fir Trees, Hawkhurst, Kent, Mrs. Catherine Hole, widow of the late Dean Hole. While at the Deanery, Rochester, she had a pretty garden in that old used-up soil, and after the Dean's death she settled at Wateringbury, near Maidstone. She made many friends in the district, filled the office of churchwarden, and did much useful work. Later, she bought the Fir Trees, a house standing in about three acres of grounds, and she soon made the garden gay with flowers. Many will miss her sympathy and kindness. Mrs. Hole had no fewer than thirty-five relatives engaged in the war.

DEBATING SOCIETIES.

DUMFRIES AND DISTRICT HORTICULTURAL

At a meeting of the committee, held in Dumfries, on the 29th ult., it was reported that Provost S. Abbott had agreed to again accept office as chairman; and that Mr. W. Edgar was willing to accept the offices of secretary and treasurer in room of Mr. John L. Armstrong, who desired to retire. Mr. Edgar was unanimously appointed, and Mr. Armstrong was most cordially thanked for his invaluable services. The meeting agreed to offer its congratulations to a former member, Lieut. T. K. Newbigging, formerly of Messrs. T. Kennedy and Co., on the official recognition given to his distinguished services in the field. After a full discussion, it was resolved that no show be held this year, but that a sale of flowers, fruit and vegetables be promoted on behalf of war relief funds.

BRISTOL AND DISTRICT GARDENERS.

The usual fortnightly meeting of this Association was held at St. John's Parish Rooms on the 10th inst. Mr. H. Woodward presiding over a good attendance. The appointed lecturer being unable to attend, the evening was devoted to a debate upon Bees, Vegetables, Orchids, and Sweet Peas. Messrs. Hayball, Curtis, House, and Harford introduced the various subjects, and the discussion proved both useful and interesting. The prizes offered by Col. Cary Ballen, J.P., for two Cypripediums were won by Mr. Jennings (1), Mr. Curtis (2), and Mr. Scott (3). In the points competition Mr. Baston was awarded five for two Dendrobiums, and Mr. Blanchard four for a Cineraria.

READING AND DISTRICT GARDENERS.

The fortnightly meeting of the above Association was held on Monday, the 7th inst., the president (Mr. E. P. Fiquet Sutton) presiding. The subject for discussion was "Mushrooms," and was introduced by Mr. E. P. Seldon. The Gardens, Woodhatch House, Reigate, a member of the Redhill and Reigate Gardeners' Society. The lecturer gave concise directions for the preparation of the manure, the making of the beds, inserting the spawn, temperature, covering, watering, and gathering the crop. The exhibits in the "Points" competition were of an excellent character. Four new members were elected.

MARKETS.

MARKET GARDEN, February 17

Cut Flowers, &c. Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Azalea, white, per doz. bun.	3 0-3 6	Orchids, Cypripedium	2 6-3 6
Camellias, white, per doz.	1 6-1 9	Odontoglossum crispum	4 0-5 0
Carnations, per doz. blooms, best American varieties	1 3-2 0	Pelargonium, per doz. bunches, double scarlet	4 0-6 0
— smaller, per doz. bunches	—	Primroses, per doz. bun.	2 0-2 6
— Carola (crimson), extra large	3 0-3 6	Richardias (Arums), per doz.	3 6-4 6
— Malmaison, per dozen blooms	—	Roses, per dozen blooms	—
— pink	10 0-15 0	— Duchess of Wellington	—
Daffodils, per doz. bunches	—	— Lady Hillingdon	4 0-6 0
— Double Van Zion	3 0-4 0	— Liberty	5 0-8 0
— Emperor	3 0-4 0	— Madame A. Chatenay	—
— Golden Spur	2 6-3 0	— Melody	—
— Henry Irving	1 6-2 0	— Mrs. Russell	—
— Princess	2 0-2 6	— My Maryland	—
— Sir Watkin	2 6-3 0	— Niphetos	3 0-3 6
— Victoria	3 6-4 0	— Prince de Bulgarie	—
Eucharis, per doz.	2 0-2 6	— Richmond	4 0-6 0
Freesia, white, per doz. bun.	1 6-2 0	— Sunburst	5 0-8 0
—	—	— White Crawford	—
Geranias, per box of 15 and 18 blooms	6 0-7 0	Snowdrop, per doz. bun.	2 0-2 6
Hyacinth, Roman, per doz. spikes	8 0	Spiraea, white, per doz. bun.	—
Lapageria, per doz. blooms	—	Stock, double white, per doz. bunches	—
Lilac, white, per doz. sprays	4 0-5 0	—	—
Lilium, longiflorum, per doz. long	4 6—	—	—
— short	4 0-4 6	—	—
— lancifolium album, long	2 0-2 6	—	—
— short	2 0-2 6	—	—
— lancifolium rubrum, per doz. long	1 6-2 0	—	—
— short	1 6—	—	—
Lily-of-the-Valley, per dozen bunches	—	—	—
— extra special	24 0—	—	—
— special	15 0-18 0	—	—
— ordinary	—	—	—
Narcissus, Ornatus, per doz. bunches	2 6-3 6	—	—
Orchids, per doz.	—	—	—
— Cattleya	12 0-15 0	—	—

French and Guernsey Flowers.

	s.d. s.d.		s.d. s.d.
Anemone, double pink, per doz. bun.	1 0-1 6	Ranunculus, red, per doz. bun.	8 0-9 0
— de Caen, min., per doz. bun.	4 0-5 0	— Barbaux, per doz. bun.	3 0-4 0
— mauve, per doz. bun.	2 6-3 0	— carmine, per doz. bun.	3 0-4 0
Marguerites, yellow, per doz. bunches	1 6-2 0	Safrano Roses, per packet, 24's	—
Mimosas (Acacia), per pad	5 0-6 0	Stock, white, per pad	5 0-6 0
Narcissus, Grand Primo, per doz. bun.	1 6-2 6	Violets, Parma, large bun.	2 6—
— paper white, per pad	8 0-9 0	— each	—
— Soleil d'Or (Guernsey), per doz. bun.	1 0-1 6	— single, per pad, 48-60's	—

Cut Foliage, &c. Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches	7 0-8 0	Fern, French, per doz. bunches	0 6-0 8
Agrostis (Fairy Grass), per doz. bunches	2 0-4 0	— common	4 0-5 0
Asparagus plumosus, long trails, per half dozen	1 6-2 0	Galax leaves, green, per doz. bunches	—
— medium, doz. bunches	12 0-18 0	Hardy foliage, various, per doz. bun.	4 0-8 0
— Sprengeri	8 0-12 0	Honesty, per doz. bunches	10 0-12 0
Berberis, per doz. bun.	4 0-5 0	Lichen Moss, per doz. boxes	15 0-18 0
Carnation foliage, doz. bunches	4 0-5 0	Moss, gross bunches	7 0-8 0
Croton foliage, doz. bunches	12 0-15 0	Myrtle, doz. bun.	—
Cycas leaves, per doz.	5 0-12 0	— English, small-leaved	6 0—
Eulalia japonica, per bunch	—	— French, per doz. bunches	1 0-1 3
		Smilax, per bun. of 6 trails	1 3-1 6

REMARKS.—The short supply of Lilium longiflorum, resulting in advanced prices, has made a better demand

for Richardias, and the best blooms are soon cleared the supply of Lily-of-the-Valley is somewhat short. There is an abundant supply of single and double Daffodils, and Narcissus ornatus is plentiful. Fairly large consignments of the latter are arriving from the Spalding district. Roses are getting more plentiful and their prices are lower. In addition to the variety Richmond, some fine blooms of Lady Hillington, Lady Love and Sunburst are offered. The supplies of flowers from Guernsey and Scilly are very heavy. They chiefly consist of yellow Narcissus and Daffodils, which are offered at cheap rates, white Narcissus grand Primo being in demand, and prices remain regular. The non-arrival of French flowers on Friday has caused great disappointment among the provincial buyers, but there were abundant supplies on Saturday, which had to be offered at very low prices in order to clear. White Stock and a few pads of Star of Bethlehem are arriving in excellent condition.

Fruit: Average Wholesale Prices.

Apples—	s.d. s.d.	Dates, per doz.	s.d. s.d.
— Albemarle, per barrel ..	40 0-45 0	boxes ..	4 6-5 0
— Californian, per box ..	11 6-12 6	Grape Fruit, per case ..	18 0-20 0
— English cooking, per bus.	7 0-8 0	Grapes: English, black, per lb.	1 3-3 6
— Nova Scotian, per barrel ..	20 0-25 0	— Almeria, per bbl. of 60 lbs.	21 0-25 0
— Oregon, per box ..	13 0-16 0	Lemons, per case	9 0-18 0
— Wenatchee, per case ..	9 0-12 0	Lycches, per box	1 4-1 6
Apricots, Cape, per box ..	4 0-6 0	Nectarines, Cape, per box ..	4 0-8 0
Bananas, bunch—		Nuts, Brazils, new, per cwt.	70 0-75 0
— Medium ..	7 6-10 0	— Coconuts, per 100 ..	22 0 —
— N-medium ..	9 0-12 0	Oranges, per case	13 0-50 0
— Extra ..	10 6-14 0	— Californian, Seedless, per case ..	23 0 —
— Double X ..	12 0-16 0	Peaches, Cape ..	6 0-10 0
— Giant ..	15 0-16 0	Pears, per case ..	22 0-25 0
— Red, per ton	£20 0 —	— Cape ..	3 0-5 0
— Jamaica, per ton ..	£16 0 —	Plums, Cape ..	4 0-8 0
Chestnuts—		Strawberries, forced, per lb.	8 0-15 0
— Italian, per bag ..	23 0 —	Walnuts, Naples, per cwt.	70 0 —
— Spanish, per bag ..	12 0 —		
Cobnuts, per lb.	0 5-1 0		
Cranberries, per case ..	11 0-12 0		

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes, Globe, per doz.	3 6-5 0	Mushrooms, cultivated per lb.	0 9-1 3
— Jerusalem, per cwt.	3 0 —	— Buttons ..	1 3-1 6
Asparagus, Paris green ..	4 0-4 9	Mustard and Cress, per doz. punnets ..	1 0 —
Aubergines, per doz.	— —	Onions, English, per cwt.	14 0-15 0
Beetroot, per bag	4 6 —	— spring, per doz. bun.	4 0 —
Beans, Broad, per pad ..	6 0 —	— Valencia, per case ..	18 0-20 0
— Madeira ..	6 0-10 0	Parsnips, per bag	3 0 —
Brussels Sprouts, per 1 bus.	2 6 —	Potatoes—	
Cabbage, per tally	2 6-4 6	— Channel Is-lands, per lb.	0 4-1 0
Carrots, per doz.	2 0-3 0	Radishes, per doz. bun.	0 6-1 0
Cauliflowers, per tally ..	8 0-12 0	Rhubarb, Forced, per doz.	0 9-1 3
Celeriac, per doz.	6 0 —	— natural, per doz.	3 0 —
Celery, per fan ..	0 9-1 6	Savoy, per tally	3 0-6 0
Chicory, per lb.	0 4 —	Seakale, per doz. punnets ..	12 0 —
Cucumbers, per doz.	10 0-18 0	Shallots, per 4 sieve ..	3 0-3 6
French Beans (Guernsey), per lb.	3 0-4 0	Spinach, per bus.	4 6 —
Garlic, per lb.	0 10-1 0	Tomatoes—	
Greens, per bag ..	2 0 —	— Teneriffe, per bundle ..	12 0-21 0
Herbs, per doz. bun.	2 0-6 0	Turnips, per cwt.	3 0 —
Horseradish, per bundle ..	3 0-4 0	Turnip Tops, per bag ..	1 6 —
Leeks, per doz.	1 0-2 0	Watercress, per doz.	0 6 —
Lettuce, Cabbage and Cos, per doz.	1 0-6 0		

REMARKS: Apples have been rather scarce this week, with the result of a rise in prices. Pears are now confined to Californian Winter Nells. There will shortly be a large shipment of Cape fruits, which is estimated to contain 37,633 boxes of various kinds. A similar consignment is expected to arrive on March 1. There is a limited supply of forced Strawberries. The crops of Grapes are almost exhausted. Very few Peas or Beans are arriving, but Seakale is more plentiful, whilst of Mushrooms and Cucumbers the supplies are equal to the demand. Rhubarb, both forced and natural, is plentiful. English and Valencia Onions continue to increase in price, but ordinary outdoor vegetables are plentiful. E. H. R., Covent Garden Market, February 16, 1916.

Potatoes.

	s.d. s.d.		s.d. s.d.
Bedford—		Lincoln—	
King Edward ..	4 6-5 0	Ellipse ..	4 6-4 9
Blackland ..	3 6-4 3	Evergood ..	3 9-4 3
Dunbar ..	6 3-6 9	King Edward ..	4 9-5 6
Kent—		Queen ..	4 6-5 3
Ellipse ..	4 6-5 0	Seotch—	
King Edward ..	5 0-5 3	King Edward ..	4 9-5 3
Queen ..	4 9-5 3		

REMARKS: Trade is still rather slow, and the demand is only for tubers of the best quality. Arrivals are not heavy, but quite equal to the demand. E. J. Newbourn, Covent Garden and St. Pancras, February 17, 1916.

THE WEATHER.

WEATHER IN WEST HERTS.

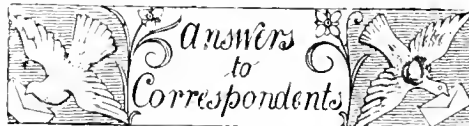
Week ending February 16.

A Fall of Snow and an Exceptionally High Wind.—This was another warm week, and the eighth in succession. There was only one unseasonably cold day, and but one cold night. On the latter the exposed thermometer registered only 5° of frost. The ground is at the present time 4° warmer at 1 foot deep and 2° warmer at 2 feet deep than is seasonable. Rain fell on all but the first day, and to the total depth of 1½ inch, which is more than half the average quantity for the month. Snow fell on the night of the 14th, covering the ground to the depth of 2½ inches. There has as yet been only one other fall of snow this winter, and that was in the middle of December, when the ground was covered to the depth of 4 inch. During the week 5½ gallons of rain and snow water came through the bare soil percolation gauge, and 5 gallons through that on which short grass is growing. The sun shone on an average for 4 hours 36 minutes a day, which is more than twice the average daily duration for the month. The winds were as a rule high, and came almost exclusively from some point between south and west. The last two days of the week were very windy, and on the 16th inst., the second of those days, the mean velocity for the windiest hour reached thirty-four miles, making this, with four exceptions, the highest wind yet recorded here in February during the past thirty years. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 10 per cent. E. M.

GARDENING APPOINTMENTS.

Mr. C. J. Burgess, for the past 18 months Gardener to G. BLEZARD, Esq., Cloverley Hall, Whitechurch, Shropshire, as Gardener to the same gentleman at Wicksted Hall, Whitechurch.

Maude Jones, for the past 4 years Gardener at Cobcroftbury, near Welwyn, as Gardener to Major BENNETT, Sidebottom, Rothamsted, near Harpenden, Hertfordshire.



ABIES NOBILIS GLAUCA: H. R. Beeton. You state that the plants of Abies (not Picea) nobilis glauca have lost their leading shoots, but you do not state their general condition of health. If the trees are healthy, the leaders have probably been damaged by birds, which often injure the tops of Abies, Picea and Pinus by alighting on them. The growths are easily damaged when young and soft, though the injury is not usually apparent until the end of the year. The only remedy is to tie a stick to the tree so that it stands well above the growing-point; the birds can then perch on that instead of the tree shoot.

AZALEA: W. H. The dark red flowers have most probably developed from the stock on which the plant was worked. Although the "sport" is not superior to varieties already in cultivation, you may wish to perpetuate it, in which case remove the other branches.

BELONIA GLOIRE DE LORRAINE: Edinburgh. The cuttings should be taken when about 2½ inches long, and inserted in sand or leaf-mould in pots, pans or a propagating-box. If pots are used they should be placed in a box, of which the bottom has been covered with a layer of ashes, and the surface of the pots should be covered with a sheet of glass, which should be turned every day. The atmosphere should be kept moist and close until the cuttings have rooted, and the temperature should be 55° at night. Plenty of warm air should be allowed to circulate about the plants at all times, to prevent damping of the leaves. In about three weeks from the time of planting the cuttings will be rooted, and should be potted singly in 3-inch pots, afterwards being transferred to 5 or 6-inch pots. The compost to be used should consist of two parts fibrous loam, one of flaky leaf-mould, one of manure from a spent Mushroom bed, and one of dried cow manure, with sufficient sand to keep the soil porous. The potting should be lightly done, and for watering, manure water and soot water may be alternately used during the growing season. Overhead syringing is not advisable, damping the space between the pots with liquid manure being preferable. Do not stop the plants, but

allow them to grow naturally. Fumigation is always advisable, even if no signs of insect pests are observed.

Books: *Subscriber, Norway*. The book on Cacti which you mention is out of print. With reference to Alpine plants, you would find either *Rock and Alpine Gardening*, by H. Hemsley (1s. 6d.), or *The Rock Garden*, by R. Farrer (2s.), useful. Either of these may be obtained from our publishing department.

CARNATION AND COLEUS: O. de V. C. The blotchy appearance of the Carnation foliage is due to an excess of moisture at the roots and in the atmosphere of the house. The Coleus leaves have been injured by some external agency: most probably deleterious fumes. No organic disease is present in either plant.

LATE PEACHES INDOORS: Reader. When the trees are in bloom keep the atmosphere dry, and pollinate the flowers by means of a camel hair brush, or a rabbit's tail fixed on the end of a stick. Unless the weather turns very cold, with much frost, you need not fear that the blossoms will be spoiled. Should it be necessary, a few garden mats thrown over the roof glass at night will be sufficient protection. See also remarks in "The Week's Work" on the cultivation of fruits under glass in last week's issue, and on p. 105.

NAMES OF PLANTS: A. P. Iris reticulata Krelagei.

NARCISSE: Old Reader. Your Narcissi planted out-of-doors have probably failed through being too much in the shade, and the soil being too dry. The roots of certain Conifers, including Cedars, are more or less injurious to bulbs. We should advise you to take up the bulbs and replant them in a more open spot away from the Cedar trees.

PEACH TREES GUMMING: W. H. The condition of gumming, or gummosis, as it is sometimes called, is usually the result of unsuitable cultural conditions. Badly-drained soil, or soil which is too rich or otherwise uncongenial, may produce a tendency to the disease, but it is usually considered to be due to a fungus or bacterium, following upon a wound or injury to the bark. Trees worked on unsuitable stocks are very liable to gummosis, but if such is not the case with your trees good cultivation and careful, discriminating pruning will do much to ward off attacks. There is no known cure, but with the removal of the cause, the trouble will gradually disappear.

POLLARDING POPLARS: A. T. H. Populus Tremula is one of the very few Poplars that are unsuitable for pollarding, more especially when the trees are large. Should the owner of the trees be inclined to take the risk, we recommend you to cut the tops in a slanting direction, and dress the cut surfaces with gas-tar. This will allow the water to drain off and prevent decay from attacks of fungous diseases.

STOVE PLANT: O. de V. Charlton. The plant is *Aphelandra aurantiaca*, a native of South America. The species requires to be grown in a hot-house or stove, and should be potted in compost consisting of two parts loam and one part peat, with the addition of sharp sand. The pots should be well drained, and the plants supplied with plenty of water whilst growing. After the flowering period is past, keep the plants somewhat drier and cooler for a time. As soon as they show signs of making fresh growth they should be repotted, and be cut back to within two or three eyes of the base of the previous year's growth. When the young shoots have made a few leaves their points should be pinched out to promote a bushy habit. The plants should be grown in a warm house during the summer, and be kept somewhat cooler in the autumn to harden the wood; during the flowering period in winter they should be grown in a moderately high temperature. The Conifer is *Thuja dolabrata*.

Communications Received.—A. T. H.—H. E. S.—W. J. W.—W. L. C.—P. J. W.—S. A.—D. C. and H. S.—L. E.—Sydney B. Gdns.—W. C.—J. S.—Constant Reader.

THE

Gardeners' Chronicle

No. 1522.—SATURDAY, FEBRUARY 26, 1916.

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LAND SETTLEMENT FOR SAILORS AND SOLDIERS.

AN elaborate scheme for the settlement of discharged sailors and soldiers on the land is proposed in Part I. of the Final Report of the Departmental Committee appointed to consider that subject, leaving the question of employing some of the men on the land for wages for the second part, to be issued hereafter. In their introductory remarks the Committee point out that they have assumed the Government to be agreed that it is to the advantage of the nation to increase the agricultural population and the supply of home-grown food, and that the attainment of these objects can and ought to be promoted by attracting to the land suitable ex-Service men, provided that this can be done with a reasonable certainty that the men will make a good living on the land when they get there. While disabled men are referred to as having the first claim on the State, it is urged that able-bodied men deserve similar consideration. It points out that one of the most important lessons learnt from the war is the extent to which the defensive power of a country is strengthened by its capacity to produce food for its inhabitants. Similar agreement, it adds, is entertained as to the stability and physical strength of a nation being largely dependent upon the maintenance of a considerable proportion of the population in rural districts, and the Committee urges that a unique opportunity of increasing the rural population will result from the demobilisation of the Army and Navy at the end of the war.

So far, the views of the Committee will meet with general acceptance; for,

although most of the men to be discharged from national service will be needed in the spheres of employment which they left when they enlisted, while for many situations have been actually kept open, there will be a common wish to consider the interests of men who have risked their lives for their country, and to help men suitable for an agricultural or horticultural career to adopt it if it is their desire to do so. But whether the profitable production of food in the country would be increased by the settlement upon small holdings of men unfamiliar with work on the land, including disabled men, is another question. The Committee endorses statements made in Reports of the Board of Agriculture on the working of the Small Holdings Act, to the effect that in the great majority of cases the land has been improved since its conversion into small holdings, that more capital has been employed on the land, and that a substantial increase in the population engaged on it has resulted. Although evidence as to the first two of these statements is conflicting, it is to be hoped that the claims are justified; but the Committee, in arguing that the particular scheme which it advocates cannot be well carried out by the County Councils, points out that those authorities have accepted applications for holdings only from men who have had the desired experience in land cultivation, and who possessed sufficient capital for farming the acreage acquired. The Committee would not require agricultural or horticultural experience in ex-Service men, though it will be seen, when their plan comes to be described, that it does not differ materially from the County Councils' in relation to capital. Their reasons for not suggesting that the County Councils should carry out their scheme are valid, as no persons would more readily admit than those authorities. While they would welcome any assistance from private landowners or voluntary societies in placing ex-Service men on the land, they hold that the duty of carrying out that purpose must be undertaken in the main by the State, leaving County Councils, under an amended Small Holdings Act, to provide for men who may not be disposed to take up land under the Committee's scheme.

It is recommended that the Board of Agriculture should be empowered to acquire land for State settlements by purchase or on lease, and to improve, manage, sell, or let the land. In most cases it is believed that land will be available by voluntary agreement; but it is urged that powers of compulsory purchase should be conferred upon the Board. Settlement on the colony system is deemed essential, in order to provide for expert guidance, co-operation, business organisation, and social amenities for the settlers. The size of a colony must depend upon circumstances; but the ideal settlement, it is suggested, would be a village community of at least 100 settlers, including men with families, unmarried men, and men engaged in trades subsidiary to agriculture. For this number, if the colony were devoted to fruit growing and market garden-

ing, 1,000 acres would be the minimum, while 2,000 acres would be required for dairy or mixed farming. The Committee has come to the conclusion that the most suitable type of holding for men with little or no previous experience of agriculture is that of a fruit and vegetable holding; for, curiously enough, it holds the opinion that fruit growing and market gardening can be mastered more easily and quickly than any other form of cultivation. It is admitted that there is a limit to the number of such holdings which could wisely be created immediately, in view of the danger of causing glut in the markets, and thus reducing prices to an unremunerative level. Some authorities, it is added, maintain that there is already an over-production of some market-garden crops; but the Committee is convinced that gluts are usually the results of want of market organisation, and that if distribution is properly organised, there is a considerable opening for an increase in the home supply of many kinds of fruit and vegetables. There are many holdings of this type, it is declared, only five acres in extent, or even less, on which the occupiers are able to support families comfortably, and, without employing assistance, a man cannot cultivate more than three acres intensively. Small dairy holdings, devoted mainly to the supply of milk, the Committee thinks, might be increased in number almost indefinitely, milk being one of the few articles of which the home producer has a practical monopoly, while the supply for years past has not kept pace with the demand. The area proposed for a dairy holding is twenty-five acres. The third type of holding is a mixed farm of thirty-five to fifty acres, comprising both arable and grass land. Pig and poultry keeping, it is held, should be included in each of the three types named above; but the Committee does not recommend poultry farming as a sole occupation. At considerable length, the Committee gives its reasons for coming to the conclusion that the tenure of the occupiers of land in the State colonies should be one of tenancy.

It is proposed that men devoid of experience in the cultivation of the land should be provided with cottages and gardens, and employed in working for wages until they had been sufficiently instructed. Land would be reserved adjoining their cottages to form small holdings for them when they were deemed capable of managing such holdings. In the meantime the land not held by the settlers would be managed as a State farm. A central farm of 250 acres would be permanently reserved in each colony for the employment of men, the supply of horses and implements for the small holders, and other purposes. This farm would be managed by the director of the colony, under whom would be a practical expert in agriculture or horticulture, according to the character of the colony. Instruction would be provided for the wives of settlers, to enable them to assist their husbands. A thorough system of co-operation in buying and selling, credit banks, demonstration

holdings, women's clubs, and other social amenities are among the arrangements proposed.

The equipment of the colonies, including the supply of cottages, other buildings, gardens and fruit trees would be provided under the scheme by the State. Rents would be sufficient to recoup the capital outlay and the cost of management, except the salaries of the staff and the cost of preliminary training; but no sinking fund for the repayment of the purchase price of the land would be included. It is estimated that the rent of a fruit and market garden holding of four

A plan is annexed to the Report illustrating the division of a tract of 1,000 acres for a fruit and market garden colony. The holdings in the several sets range in size from three to five acres, with land for extension not sufficient as a rule to double the area of each. The colony of 1,000 acres is divided into 425 acres for holdings, 325 acres for extension, and 250 acres for the permanent central farm. Thus the average area per holding, after all the extension land has been added, would be under six and three-quarter acres per holding. *Southern Crooner.*

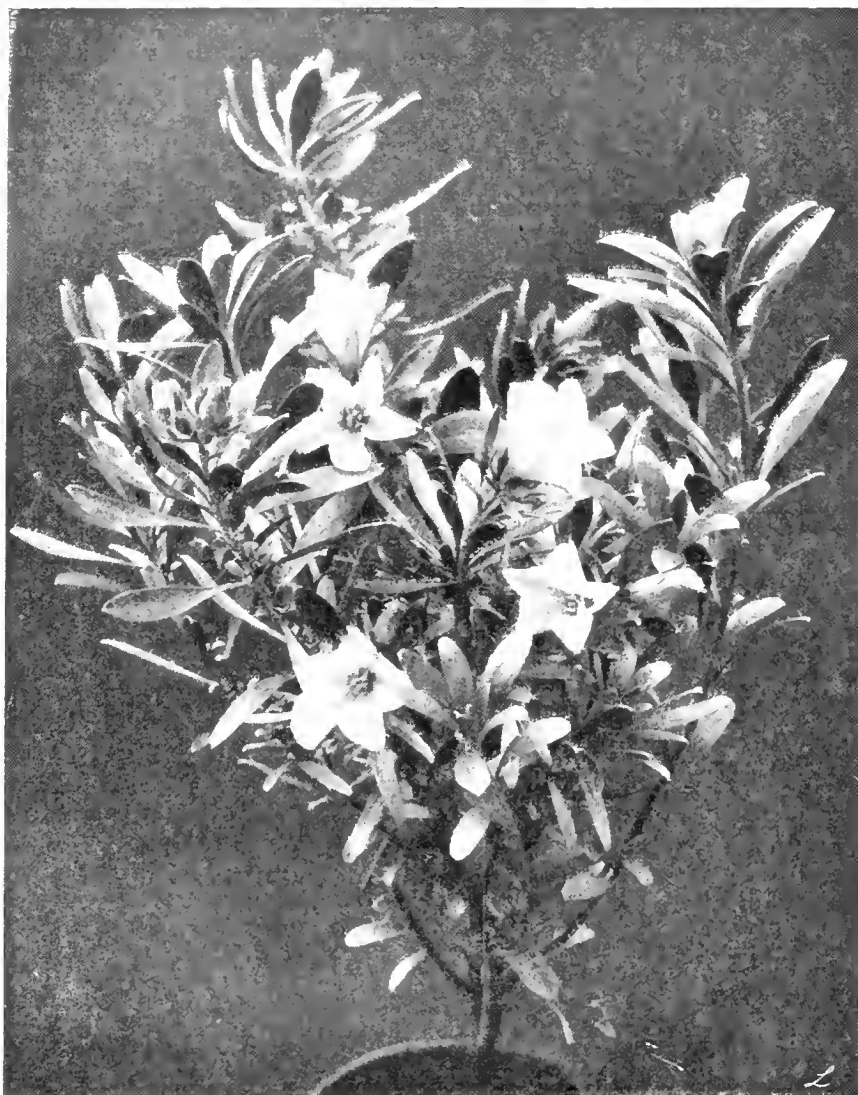


FIG. 40.—CONVOLVULUS CNEORUM.

acres, one and a half acres planted with fruit trees and bushes, with a cottage, pigsty, movable fowlhouse and tool shed, would be about £24 per annum, and that additional land, without equipment, could be let at £2 to £2 10s. an acre. Similarly, the rent of a dairy or mixed holding of twenty-five acres, with cottage and other buildings, is put at about £74, and land for addition at £2 2s. per acre. The capital required for a holding of the former type is simply described as "small," while for one of the latter type, twenty-five acres in extent, at least £200, it is thought, would be needed. Tenants would be expected to have additional capital to enable them to live until their holdings paid.

For immediate action, which is deemed highly important, it is urged that at least three colonies should be established in different parts of the country—one for fruit and market garden produce, one for dairy farming, and one for mixed farming. For this purpose it is proposed that a sum of £2,000,000 should be charged on the Consolidated Fund, and advanced in instalments to the Board of Agriculture as required.

The Royal Horticultural Society showed the plant which secured the First-class Certificate on February 20, 1866, and since that time some four dozen awards have been given to forms of the species, the records showing that the plant generally flowers in the first three months of the year.

ORCHID SALE.

THE Marlfield collection of Orchids, formed by the late Richard Le Doux, Esq., Marlfield, West Derby, near Liverpool, which was sold on the premises, without reserve, by Messrs. Protheroe and Morris, on the 16th inst., was one of the most successful sales ever held in the North of England. It commenced at 11 a.m., and, early as the hour was, a good company assembled. Competition for every lot was sustained from beginning to end, although the catalogue was not finished until 6 p.m. The result was gratifying in that it seems to mark a decided revival of the Orchid trade, which has unavoidably suffered in consequence of home economies and the shutting out of foreign trade.

The success of this sale was, in a measure, forecasted by the result of the sale on February 4 of various Orchids by Messrs. Protheroe and Morris at their Central Auction Rooms, which sold remarkably well.

CONVOLVULUS CNEORUM.

THE shrubby species of *Convolvulus* represented in fig. 40 is one of the oldest species in cultivation, having been introduced from South Europe nearly 300 years ago. The reason for growing it in a pot is that the plant is not perfectly hardy in cold districts, and the figure shows clearly enough that in such localities the species is well worth a place in the cool greenhouse. In *My Garden in Summer*, page 283, Mr. Bowles refers to the pretty silvery leaves, and points out that the plant loves a hot, dry place (even in Mr. Bowles's dry garden). There it produces its white flowers and pink buds very freely in late autumn.

THE BULB GARDEN.

GALANTHUS NIVALIS SCHARLOKII.

THE curious *Galanthus nivalis* Scharlokii is again in bloom and attracts attention by reason of its curious divided spathe—which often curves over like wings or horns—and by the green markings on the exterior. The dividing of the spathe may begin at the time when it commences to pierce through the soil, and later the flower itself appears like a little white ball forcing its way through the surface of the ground. The variety was found about 1868 by Herr Scharlok in the valley of the Nahe, a tributary of the Rhine. The late Mr. James Allen said that it grew and increased well with him, but this is not the case in my garden. I have here several seedlings raised by Mr. Allen.

CROCUS SIEBERI VERSICOLOR.

A most fascinating *Crocus* is the variety of *C. Sieberi* called *versicolor*, which is now in bloom. It is rare in gardens, although it flowers as freely as the typical *C. Sieberi*, a most reliable little species. It is variable in a wild state, and, according to Mr. George Maw, has "the segments variously striped like a Picotee, with purple and white, which blend into the bright orange of the throat." The only form of *C. Sieberi versicolor* which I have seen answers to fig. 7 in plate XXXIII, of Maw's *Monograph*. This is indeed a most beautiful *Crocus*. It has a purple tip, with a broad band of white, and a large purple blotch which joins the orange of the throat on the exterior. Maw states that it was first introduced by Mr. Elwes, from corms received from H.M. Consul at Canea, Crete, S. *Arnott*.

ORCHID NOTES AND CLEANINGS.

CATTLEYA TRIANAE MARIE.

IN Mr. Leopold de Rothschild's Orchid houses at Gunnersbury House, Acton, this very charming variety of *Cattleya Trianae* appeared several years ago, and was named in honour of Mrs. Leopold de Rothschild.

Mr. Hudson, the gardener at Gunnersbury House, has again flowered it in excellent form, and it has been much admired as one of the best and most distinct of the winter-flowering *Cattleyas* in flower there. The flowers are of perfect shape, the petals and sepals broad and well displayed; they are silver-white tinged with blush rose, the tube of the lip of the same delicate colour and the broad front lobe violet-purple. There is a slight golden tint in the centre of the lip and some light red lines at the base.

Cattleya Trianae exhibits great variation, the types from the different localities in which it is found having well-marked features.

CULTURAL MEMORANDUM.**FIG TREES ON WALLS.**

THE cultivators of Fig trees on walls usually believe that it is sufficient merely to attach the trees to the walls and then leave them more or less to themselves. The result is that the young branches and fore-right growths project forward a considerable distance from the wall, thereby losing all the benefit they would derive from contact with the sun-warmed surface. Figs should

six inches apart; this will admit of one leading shoot of the current year's growth being laid between each six inch space. These shoots should be stopped when they have attained the length of eighteen or twenty inches, and all fore-right and other superfluous growths pinched back to within two or three inches of their base. When in the year 1871 I took charge of the gardens at Longford Castle, Wiltshire, I found that it was the rule there to de-nail all the Fig trees (which covered a wall space of some 240 feet by 9 to 12 feet) on the approach of winter,

FLORICULTURE FIFTY YEARS AGO.

It is now just half a century since I began to make my living by horticulture, and at that time things were very different from what they are at the present day. Then, the ribbon border system of summer bedding was all the vogue, the flowers being disposed in long parallel lines, the longer the better. Tricolour-leaved Pelargoniums were the fashion, a guinea and a half being asked for some of them.

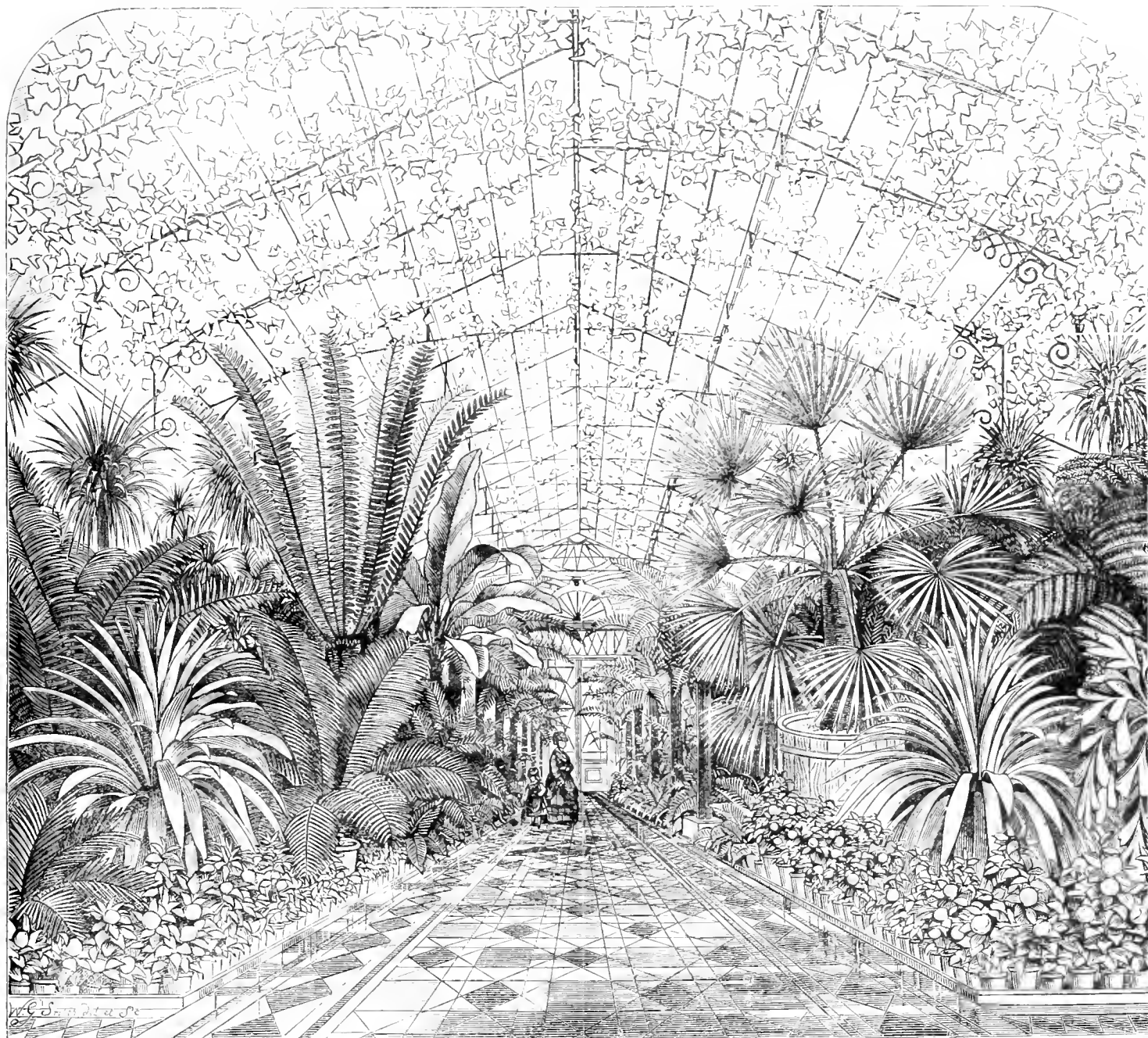


FIG. 41.—MR. BULL'S SHOW HOUSE AT CHELSEA. FROM A SKETCH MADE BY MR. WORTHINGTON SMITH IN 1873.

(See p. 118.)

be trained in the same way as Peaches or Morello Cherries—i.e., as many old shoots as can be dispensed with should be cut out, to make room for the growths of the previous year. The best time for pruning is the middle or end of April, as soon as the trees begin to push into growth. The young shoots will then draw to themselves the sap that at any other time would tend to flow away through the freshly made wounds. Furthermore, the cultivator will be able to make choice of shoots well furnished with embryo fruits. The shoots should be trained fan-wise, close to the wall, at distances of about

bundle the branches together half-way down the wall, and cover them with mats. As I suspected this to be unnecessary, I left one tree unprotected, and, finding that it sustained no injury, but seemed rather more vigorous than the others, I followed this plan with all the trees thenceforth. Frost did them no harm, and they bore good crops of fruit. The varieties were chiefly Brown Turkey, with one tree each of White Marseilles, Castle Kennedy and Brunswick. Brown Turkey and White Marseilles are freely-bearing varieties, but the others are rather shy, bearing large, but somewhat sparsely produced, fruits. H. W. W.

Though they remained popular as pot plants for some time after, only the more robust varieties proved to be suitable for bedding purposes. Mrs. Pollock was one of the best, and may still be seen occasionally. The first double flowered Zonal Pelargonium created quite a sensation. This was Gloire de Nancy, sent out by M. Lemoine, of Nancy, in 1866. The earlier varieties with double flowers were, of course, grown, but they soon gave way to a dwarfier, more freely-flowering, race.

Ivy-leaved Pelargoniums, now so popular, were thought but little of until the advent of the first

double-flowered form in 1874. After that they made rapid progress, until they attained the position they occupy to-day.

Zonals with single blossoms were largely grown before my time, and in their case there has been a steady rather than a rapid improvement. No variety has attained such a hold on the public affection as Paul Crampel, sent out by Lemoine in 1892, though Vesuvius was for many years grown more than any other. Show, Fancy, French and Decorative Pelargoniums were cultivated as large specimens, a practice which has prevailed, though to a gradually decreasing extent, to the present day. Very few varieties of the Show and Fancy sections are now grown, most of those met with belonging to the Decorative or Regal class.

It was my good fortune to see the great International Horticultural Exhibition of 1866, and the subjects that impressed themselves most upon my youthful mind were the large specimen stove and greenhouse plants, immenso Pelargoniums, and pyramidally-trained Azaleas, the latter simply masses of bloom. In my early days Begonias were but little grown. Richard Pearce had only just introduced the tuberous-rooted Andean species, destined to give rise to the race as we know it to-day. The first of the Veitchian hybrids from Pearce's introductions was *B. Sedonii*, sent out in 1870, while double-flowered varieties made their appearance in 1876. They were *B. Gloire de Nancy* and *B. Lemoinei*, both raised by M. Lemoine, of Nancy. Since that time a steady advance has taken place in tuberous-rooted Begonias. Perfection would appear to have been reached in the flower as shown at the principal exhibitions.

Half a century ago Roses were very different from what they are to-day, hybrid perpetuals being the kinds chiefly grown. Carnations, both "Malmaison" and Perpetual-flowering, Streptocarpuses (the commencement of which race dates from 1837, when Mr. Watson, of Kew, raised the earliest crosses), flowering Camas (in the production of which such great strides were made in the closing years of the last century), Marguerites and Chrysanthemums, as we know them to-day, are now everywhere grown.

In the mid seventies I was engaged in one of the principal market-growing establishments. It occurred to the principal to try growing Chrysanthemum frutescens for cut flowers, and very remunerative it turned out to be, so much so, indeed, that a large house (then occupied by Camellias) was cleared for the accommodation of the plants. This was the first appearance of Marguerites in Covent Garden Market, and then only as cut flowers. Hippeastrums, too, have made great strides within recent years. With reference to culture out-of-doors, one may mention the prominent position now taken by hardy plants. Fifty years ago the herbaceous border occupied but a subordinate position, while rock and water gardens in their present form were practically unknown. Floral decorations, too, are nowadays very different from what they were of old, being far more graceful. The bouquet of former years was a very formal affair, in which every flower was wired, and stemless blossoms were frequently used. W. T.

PUBLICATIONS RECEIVED.—*Special Leaflet No. 51 (Suggestions for the Manuring of Grass Land)*. (London: Board of Agriculture and Fisheries, Whitehall Place).—*Journal of Agricultural Science*, Vol. VII., Part 3. February, 1916. (London: Cambridge University Press, Fetter Lane.) Price 5s. net.—*Fifteenth Report of the Woburn Experimental Fruit Farm*. By the Duke of Bedford, K.G., and Spencer U. Pickering, M.A., F.R.S. (London: Amalgamated Press, Ltd., Fleetway House, Farringdon Street.) Price 2s. 3d., post free.

The Week's Work.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

BORDER CHRYSANTHEMUMS.—Plenty of cuttings of border Chrysanthemums should be available now, and if prepared in the usual way and pressed into a propagator filled with pure sand they will root quickly and freely. The same propagator and sand as are used for indoor Chrysanthemums may be employed. Plants raised from cuttings each year produce much better flowers than the old stools. There are innumerable varieties, *Carrie*, *Rubis*, *Perle*, *Chatillonnaise*, *Market White*, *Blush Beauty*, *Crimson Marie Masse*, *White Quintus* and *Terra Cotta Queen* are all well worth growing. If it is desired to increase the stock of a particular variety, the old stool may be potted and placed in a warm house to furnish a number of cuttings. Later the tops of the rooted cuttings also may be rooted.

THE ROCK GARDEN.—The rock garden should be made tidy at the first opportunity. All dead foliage should be cut off and the soil loosened. By the use of a hand fork weeds will be the more easily removed, especially where they are growing among the plants. Failures should be made good with plants from the reserve plot. Certain species are apt to fail the first winter they are planted through excessive wet. Wherever it is possible the workman should stand on the stones, for the soil is none too dry. If it is pasty the work of digging should be deferred. A top-dressing of loam and leaf-mould will be appreciated by most young plants.

ANNUAL ASTERS.—Though somewhat late in flowering, annual Asters make a charming display, and are splendid for furnishing cut blooms during August and September, and even later in mild autumns. I especially recommend the type of which Sutton's Mammoth is a good example, and there are varieties in several colours with long flower-stems. For purposes of cut bloom mixed colours should be grown in a border, for then it is always possible to gather bunches of approximately the same shade without depleting the flowers in the more frequented quarters of the garden. They may be grouped in distinct colours or the shades mixed together; pink and blue associate pleasingly. The seeds may be sown now in moderate heat, and the plants grown in fairly cool conditions. Soon after the seedlings appear they should be pricked off either into boxes or on a bed of fine, porous soil in a frame.

AGERATUM AND HELIOTROPE.—A good type of the blue Ageratum carefully selected for dwarfness by propagation from cuttings, makes a splendid edging for a bed filled with the Ivy-leaved Pelargonium, *Mdme. Crousse*. It will root in a heated propagator in a few days, and it is only necessary to keep a few plants through the winter to be able to work up a stock of several hundreds by taking cuttings. Heliotrope will now root very freely if given a little bottom heat. Instead of keeping stock plants of these through the winter, sufficient cuttings can be obtained from the side growths taken out of the plants which are being formed into standards. By starting in good time with the propagation, a sufficient number of plants potted into 3-inch pots is obtained by June.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockings House, Wantage, Berkshire.

COLEUS THYRSOIDEUS.—When plants of this species have finished flowering they should be cut back and placed in a warm, moist house to produce shoots for cuttings. Some of the best of the old plants may be selected for potting on. Shake the soil from the roots and repot them in 8-inch pots filled with a rich compost. The plants will make large specimens by the

end of the season, and will be useful for forming large groups. Provision should be made for striking a batch of cuttings in June for flowering in small pots. They will make useful plants where dwarf specimens are needed. *Coleus thyrsoideus* may also be propagated from seed sown now.

COLEUS HYBRIDS.—A batch of these plants raised from seed is valuable for use in the greenhouse or conservatory during late summer and autumn. Sow the seeds thinly in jars, and pot the seedlings as their requirements demand. They must be kept moving in a progressive atmosphere, and be well exposed to the sun, except during the early stages of growth.

PROPAGATING EDGING PLANTS.—Such plants as *Panicum*, *Pilea*, and *Selaginella*, used as edgings in plant houses, need replacing when they become exhausted. Cuttings inserted in 3½ in. pots quickly make suitable plants for the purpose. Old plants of *Isolepis gracilis* should be divided, and the portions repotted annually.

BEGONIA GLOIRE DE SCEAUX.—When these plants have finished flowering attention must be given to the propagation of cuttings. Slightly cut back the old plants, and place them in a warm house. Spray them two or three times a day with tepid rain-water, and frequently damp between the plants to create a moist atmosphere. They will quickly produce young shoots suitable for cuttings, which may either be inserted singly in thumb pots, or three or four round the side of 3½-inch pots, in a light, sandy soil. Plunge the pots in the propagating case, and shade them from the sun till rooted.

CLIVIA.—Plants of *Clivia* will now be producing their flowers. They are gross feeding plants, and plenty of stimulant must be afforded until the flowers have expanded, or they will lack colour. The flowering may be hastened if necessary by placing the plants in a warmer house. After flowering, any necessary repotting must be given attention. *Clivias* are easily increased by careful division of the roots. Give them a rich compost, and let the potting be done firmly. After potting, place them in a warm, moist house to complete their growth.

THE FORCING HOUSE.—To keep the show houses well furnished with flowering plants, place batches of the various forcing subjects in heat at regular intervals. As the season advances the plants will flower in a shorter period than hitherto. All plants that are forced into flower last longer in bloom if they are placed in a cool house for a short time to harden them before using them for decorative purposes.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

SPINACH.—If the soil and weather conditions are favourable, make a sowing of Spinach on a south border or other sheltered spot. Select ground that has been dug deeply and well enriched with manure. Sow the seeds in drills made 14 inches apart, and thin the seedlings to 6 inches apart in the rows. Make successional sowings at fortnightly intervals if the weather permits. Spinach may also be grown between the rows of early Peas.

POTATOS.—In mild localities and sheltered gardens a plantation of Potatoes may be made if the state of the soil permits. Light, dry materials, such as leaf soil, manure from a spent Mushroom bed, and old potting soil may be incorporated, and will assist the tubers to develop early. Choose short-topped, early varieties, which allow of close planting. As the tubers are rarely allowed to develop to their full size, a distance of 18 inches between the rows is sufficient, and well-sprouted sets should be planted one foot apart in the rows.

TURNIPS.—If a brick pit is available in which to place a hot-bed, a sowing of White Gem or Snowball Turnip may now be made. The hot-bed should be mild, and the heat declining before use. About 9 inches of fine soil is necessary in which to sow the seeds in shallow drills about 1 foot apart. Thin the seedlings to 6 inches apart, ventilating the frame freely. Protection from

frost should be afforded to avoid check, or many of the plants will bolt. In mild localities a small sowing may be made out-of-doors.

CELERY.—Make a successional sowing of Celery, and treat the plants as advised on page 75. Choose the large-growing varieties for this sowing. Grow on the early sown seedlings, avoiding dryness at the roots during the period of growth, or bolting may ensue. Checks of any kind should be avoided for the same reason.

RHUBARB.—Make fresh plantations of Rhubarb annually. The site should be deeply trenched and well enriched with manure. Single crowns should be planted at least 3 feet apart. These should remain for three, or, at any rate, two seasons before being forced.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHOTE, Eastwell Park, Kent.

GLASS PROTECTORS (see p. 103, last issue).—Where glass copings or permanent protectors are provided for fruit walls, the small amount of additional protection is easily arranged. Simply hang some fish-netting or other light material from the sloping front of these protectors, and nothing more will be necessary. These nets can be left till the fruit is set and swelling, when they should be entirely removed. Short of enclosing the walls, the glass copings or protectors (especially if arranged with removable glass) are probably the best methods of protecting fruit trees from frost. The glass can then be removed in the hottest part of the summer, thus allowing the trees the benefit of full exposure to sunshine and air.

PROTECTING GOOSEBERRY BUSHES FROM BIRDS.—Where bullfinches, tits or other birds are prevalent Gooseberry bushes must be protected from their depredations, otherwise great damage may be done in a very short time. Though various compounds are sold for use as bud protectors, at the time of the year when these are required the weather is usually so damp that it is almost impossible to rely on their efficiency. Dusting the bushes with soot and lime is often recommended, but it must be repeated very frequently to be effective; the liberal use of black thread is advocated; syringing the bushes with quassia water is often tried; but it is a question whether any one of these measures is really effective against the birds. The only perfect preventive is to cover in the Gooseberry quarter with some kind of netting. If fish netting is used it will assist in warding off frosts, should these occur when the trees are in bloom. Not only do the birds spoil all prospects of a good crop by destroying the buds, but they cripple the trees, so that it is important to take precautions in good time.

NEW PLANTATIONS OF RASPBERRIES.—Where new plantations of the ordinary type of Raspberry are contemplated, advantage should be taken of the first opportunity to get the planting done, but it will be better to wait if the weather is bad than to trample on the ground when it is wet. See that the proposed site is thoroughly clean of perennial weeds, particularly the Bind-weed or wild Convolvulus, as if this gets a footing in the Raspberry quarter it is almost impossible to eradicate. To give these late-planted canes the best chance of establishing themselves, they should be cut down as soon as growth commences. All the energies of the plant will then be directed into building up strong canes for fruiting next year. Superlative is a thoroughly reliable variety in most districts. Other sterling sorts are Hornet and Baumforth's Seedling. Of yellow varieties The Guinea or Yellow Superlative and Queen of England are the best.

AUTUMN-FRUITING RASPBERRIES.—Though not so extensively grown as the ordinary summer-fruited varieties, the autumn-fruited Raspberry well repays cultivation. It is not too late in the season to plant canes if the work be taken in hand without delay. A piece of ground that has already been deeply trenched and manured

should be selected, but it is an essential point that it must be in full sun, as owing to the lateness of the season when the fruit is developed, it is useless to plant in a shady, or even partially shaded, position. Of varieties grown, both November Abundance and Queen Alexandra are to be recommended. The Hailshamberry has proved the best variety here, and is a valuable addition to the autumn-fruited section. The late-fruited varieties carry their fruit on the strong, well-developed canes of the current year, and not on the previous year's canes, as is the case with ordinary Raspberries. If not already done, all growths should be cut down to the ground level, and established beds should be enriched with a dressing of farmyard manure. The chief point to note is that when the young shoots start growing they must be rigorously thinned, as leaving them to grow in a crowded condition is fatal to success.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

MEXICAN LAELIAS. The principal Laelias that come under this heading are *L. anceps* and its numerous varieties, of which there are both white and coloured forms. They flower during the winter months. When the plants have gone out of flower, they should be kept on the dry side until root-action is evident at the base of the last-made pseudo-bulb. Any that need top-dressing or repotting this season may be arranged together, where they can be watched closely for the appearance of fresh roots, when the repotting should be carried out. Let the compost consist of *Osmunda* and *Al* fibre in equal parts, with all the fine particles removed, and a little Sphagnum-moss incorporated with the last layer or top portion of fibre. For *L. anceps*, oak-wood baskets, pans, or ordinary flower-pots may be used, filled to one-third of the depth with drainage material. When it is decided to repot a plant, all the old soil should be removed, and most of the back pseudo-bulbs cut away, two or three to a lead or growing point being sufficient. When re-potting, several "pieces" should be put together to form a compact specimen, arranging one or two of the "leads" towards the centre of the receptacle, so that the new growths will be distributed evenly over the surface. Make the soil firm around the rhizomes of the plant, but do not cover these with the compost, and when the operation is completed they should be on a level with the rim of the pan. For large specimens it is advisable to place a few pieces of charcoal or broken pots in the compost, which will prevent it from remaining in a wet condition for any length of time. In all probability there will be a few examples that have ample space for further development, but have become loose through the decaying of the soil. This must be removed carefully with a pointed stick, and then replaced with fresh material. In many establishments there is a house or division set apart for these Laelias, usually termed the Mexican house. This, by the way, although an advantage, is not a necessity, and the lighter end of the Cattleya house or plant-stove will suffice if the former is not available. For a few weeks following root disturbance water should be afforded sparingly, for the plants need only enough moisture to encourage root-action, and prevent the pseudo-bulbs from shrinking. Moreover, the less water given at this stage, the better condition will the soil be in when the roots become more active. When new growth appears the plants may be exposed to a moderate amount of sunlight, and sprayed overhead in bright weather. As the season advances, the water supply may be increased, while the surroundings are kept moist by syringing occasionally between the pots. Every plant must be watched for insects such as wood-lice and cockroaches, which are very fond of the succulent young roots. The former must be trapped with pieces of Potato, cut in half, and the centre taken out. They will congregate in the cavity thus formed, and may be destroyed every morning. There are various poisons for the cockroaches, and it is advisable to secure two or three

kinds, because they often avoid one after a couple of nights, while they will devour another kind freely. When a house is devoted to *L. anceps*, there are several other plants belonging to the same genus that will succeed in this structure. These include *L. albida*, *L. autumnalis*, *L. Gouldiana*, *L. Eyermaniana*, *L. rubescens*, *L. majalis*, and *L. furfuracea*. The Mexican *Odontoglossum citreum* may be suspended near the roof-glass, and only watered sparingly until the flower-spikes are seen emerging from the new growth. The *Schomburgkias*, many of the *Epidendrums*, and some other Orchids that require more ventilation and less atmospheric moisture than most, may be cultivated in this house.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUBURNHOLME, Waverley Priory, Yorkshire.

SPRING CUCUMBERS.—A very important point in the management of spring-sown plants is to get them into their fruiting quarters before they become pot-bound. If all goes well by the time the plants come into rough leaf they will be ready for turning out, and as soon as the mounds are warmed through they will take to the soil at once. All laterals may be pinched from the base to the first wire, and afterwards each lateral can be pinched at the first joint, allowing the lead to reach to within 2 feet of the top before pinching. When plants reach this stage, if a brisk bottom heat is maintained, they will stand 68° to 70° at night and 75° to 80° by day, with 5° higher with sun heat. Moisture should be abundant, as when in full growth these plants revel in a warm vapour.

PINES.—Plants which have started into growth should receive an increase of temperature during mild weather, and advantage should be taken of bright sunny days to allow the heat to rise to 90°. Close the ventilators early, at the same time lightly damping the interior of the house or frame. Keep the evaporating troughs constantly full of water and occasionally place a handful of guano in each trough.

SUCCESSIONAL PLANTS.—Plants which were left from the first selection at the beginning of last month will show fruit at about the end of this month or the beginning of next. If the plants have been kept rather dry until this stage is reached, each plant as it shows fruit should receive a sufficient quantity of water to thoroughly soak the soil at a temperature a few degrees higher than the bed in which the plants are plunged. While the plants are in flower keep the atmosphere as dry as practicable. Give weak liquid manure and guano water, gradually increasing in strength as the fruits increase in size. A night temperature of 70° will be sufficient for another month. Later stocks may have an advance of 5° of top and bottom heat at the beginning of next month. Should any of these be dry at the roots a watering should be given to moisten the whole ball. A general overhauling should take place among the succession plants during the next few weeks. In order to have everything in readiness, the soil (a good fibrous loam) should be pulled to pieces and well warmed through. To each barrowload of loam add an 8-inch potful of soot and the same quantity of bonemeal, with a little Thompson's vine manure added. The soil for potting should be fairly dry so as to allow of its being firmly rammed in the pots without becoming adhesive. Suckers which were placed in 6-inch pots in the autumn should be moved into 10 or 11-inch pots, and a few of the strongest from 8-inch into 12-inch. The size of the pots, however, is not of so much importance as strict attention to the requirements of the plants during their period of growth. They should be plunged at 2 feet apart, and the bottom heat kept at 85°, and the atmosphere at 65°. It is not advisable to excite the plants too much until sunlight increases. Do not water the plants for a week or ten days, and afterwards water most carefully until the roots take hold of the fresh compost. It is wise to put in a few suckers every month, or as soon as they become fit to remove from the parent plant.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER, 41, Wellington Street, Covent Garden, W.C.**

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the **PUBLISHER**; and that all communications intended for publication or referring to the **Literary department**, and all plants to be named, should be directed to the **EDITORS**. The two departments, **Publishing and Editorial**, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the **EDITORS, 41, Wellington Street, Covent Garden, London**. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY—

Royal Inst. (Lecture by Dr. E. J. Russell, on "The Plant and the Soil.")

WEDNESDAY—

B.G.A. Executive meet.

THURSDAY—

Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 39.8.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday, February 24* (10 a.m.); Bar, 29.4; temp, 37°. Weather—Snowy.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY, AND FRIDAY—

Hardy Bulbs and Roots, at 12; Shrubs, Herbaceous Plants, Palms, Roses, &c., at 1.30; at 67 and 68, Cheapside, E.C., by Protheroe and Morris.

TUESDAY—

Clearance sale of greenhouse plants, 3 greenhouses, piping, motor lorry, vans, &c., at Mill Lane Nursery, Cheshunt, by order of E. Rochford, Ltd., by Protheroe and Morris, at 11.30.

WEDNESDAY—

508 c.s. Japanese Liliums, at 3.

THURSDAY—

Roses, at 67 and 68, Cheapside, E.C., by Protheroe and Morris, at 1.

The Land Settlement Scheme.

An outline of the recommendations embodied in Part I. of the Final Report of the Board of Agriculture Committee on Land Settlement is given on another page. The subject is one of such great importance, and the object which the Committee pursues—that of settling disbanded sailors and soldiers on the land—is so sure of all our sympathies that, as we point out below, there may be a danger lest the findings of the Committee be accepted without the severe criticism which they deserve. That criticism, albeit severe, should be constructive, for it ought to be within the range of the possible so to mould and modify the scheme as to make it workable and beneficent.

With respect to the dairy and mixed farming colonies—which lie beyond our special province—we need not say more than that ex-Service men with sufficient capital will probably have no difficulty in obtaining land at rents much lower than they could obtain it under a costly State colonising scheme. There is every reason

to believe that landowners generally will be very favourably disposed to give a preference to ex-Service men when they have farms vacant, and many become vacant every year. The chief difficulty would be that of providing houses and farm buildings for the smallholders, and that might be met by means of cheap loans from the State, on the security of the buildings or the holdings. As to prospects of success, milk-selling is in no need of Protection, as there is practically no foreign competition in fresh milk; but for mixed farming, after prices have gone back to the peace level, financial prospects, under unlimited foreign competition, might not be brilliant.

It is, however, to the fruit growing and market gardening division of the scheme that the most serious criticism needs to be directed. It is to be observed—and deplored—that there is no expert in these industries on the Committee, and only one of the witnesses examined is a fruit grower, while not one is a market gardener. Consequently it is not surprising to find that the Committee is gravely mistaken both as to the capital and acreage required for a holding sufficient to support a family in moderate comfort, and is in no less grave error in its views as to the experience needed to ensure a fair chance of success. The Committee's views are all very much on the small side on these points. In all probability the instances which it cites of families living on five acres or less are those in which the smallholders sell their produce to householders in neighbouring towns at retail prices. These men, moreover, commonly combine huckstering with their business as producers, purchasing fruit, vegetables, poultry, and eggs to sell again. The case is widely different when smallholders have to depend on the wholesale markets for the sale of their produce, as those under the proposed scheme must depend, whatever attempts at organisation may be made. Even at Evesham, with an exceptionally favourable soil and one of the best markets in the country, holders of less than ten acres have an extremely hard struggle to pay their way, and in bad seasons failures are not uncommon. No instruction given on a State colony would make inexperienced men equal to the skilled market gardeners of Evesham, until prolonged experience had added its lessons. Fruit and vegetable cultivation requires more skill and experience than any other branch of agriculture, and not less, as the Committee repeatedly declares. The heads of the market gardening and fruit-growing colonies cannot be trained in the course of a year or two. These posts can only be filled by men who have already gained a good knowledge of cultivation by work on the land. Fortunately there will be many young gardeners, now in the ranks, who will be available for training to fill these posts. If the training colonies select men who are already familiar with the practice of the cultivation of the land and train them in methods of special cultivation, and

particularly in the economic side of market and fruit growing, it should prove not impossible to obtain men of real competence to direct the colonies. The training of the holders themselves is a matter of greater difficulty, and it is evident that if the holders are put directly, or even after a year's or two years' training, on the land, some time must elapse before they will have learned enough of good practice to make the venture successful.

Furthermore, it must be understood that market gardening and fruit growing require more capital per acre than other forms of agriculture, and not less, as the Committee supposes. In respect of fruit growing by itself, capital is needed to tide over the years during which there is a loss instead of a profit. Fruit trees and bushes together cannot be relied on to yield a profit in the first six years. If Strawberries are grown between them, a profit may be obtained sooner; but there is reason to fear that the production of Strawberries is already sufficient. As for culinary vegetables, gluts in the markets for them are the rule rather than the exception, and any considerable increase in the number of producers would probably result in widespread misfortune. In seasons of plenty gluts in the markets for Plums and Apples are equally common. If by marketing organisation the managers of the proposed colonies could dispose of most of the produce to consumers, rather than sending them to markets already congested, the prospects of success would be vastly increased.

It is strange that the Committee did not take a lesson from the collapses of the smallholdings colonies at Mayland and Boxted, both largely due to insufficiency of capital and the small sizes of the holdings. Rents, it must be borne in mind, are vastly greater per acre when a house and buildings have to be paid for on a holding of five to ten acres, than when the acreage is doubled.

These criticisms are offered, not with a desire to discourage the settlement of ex-Service men on the land, but in order to call attention to dangers which should be avoided. Nothing that the nation may do can recompense adequately the men who have risked life and limb in the service of their country and of civilisation; and care must be taken not to allow well-meant but immatured schemes to attract the men and their families to embark on ventures not destined to lead to success.

MR. WILLIAM OWEN.—The University College of North Wales, Bangor, has appointed Mr. WILLIAM OWEN, late of Powercourt Island, to the charge of the Demonstration Gardens at Llanfair, Anglesey, and to be Practical Instructor of Horticulture. Mr. OWEN's training under Mr. SPED at Penrhyn Castle, and Mr. CRUMP at Madresfield Court, and his fifteen years' work at Powercourt, should eminently qualify him for his new sphere.

PRESENTATION TO A GARDENER.—On the retirement of Mr. E. WICKS from the Grange, Old Windsor, Berks, where he has been gardener for the past twenty-three years, he was presented with a silver-mounted umbrella and a purse of money by the staff.

BEGONIA MRS. J. A. PETERSON.—Mr. BARNARD, of Messrs. HUGH LOW AND CO., the firm who obtained the recent Award of Merit for this American-raised variety, writes to say that the parents are *B. socotrana* × *Gloire de Sceaux*, not *Gloire de Lorraine* × *Gloire de Sceaux*, as suggested in our last issue.

MEDICINAL PLANTS IN FRANCE.—France, like Great Britain, has discovered during the war that it had come to rely largely on foreign countries for its supplies of drugs. A recent summary by M. P. GUÉRIN in the *Revue Scientifique* (January 8, 1916), shows the limitations of the present cultivation of medicinal plants in France, and the extent to which the cultivation of such plants may be widened. In any attempt to introduce the cultivation of drug plants it is of the greatest importance to ascertain under what climatic and soil conditions the active principle of a particular drug plant is best developed. It

mittees view with grave concern the suggested restrictions, and respectfully call upon the Government not to take action to curtail existing facilities, and ask that representatives of the trade may be heard before any decision is taken. Mr. RUNCIMAN has since stated that the restrictions will not apply to fruit exported from the Dominions and Colonies.

THE HORTICULTURAL CLUB.—The annual meeting of the Horticultural Club was held on Tuesday last. We must defer a report of the proceedings until our next issue.

THE FLOWERING OF THE ALMOND.—An Almond tree which is growing in the suburb of Wandsworth, about five miles from London to the south-west, was observed to have fully expanded its first blossoms on Friday last, the 18th inst. The days on which the same tree flowered in previous years are:—March 9, 1915; March 2,

are well supplied with potash, and suggests that an effect of the German embargo will be to cause farmers to have recourse to lower grade potassic manures. This Dr. SHUTT thinks will be by no means a bad thing, since he is of the opinion that high-grade potash manures, such as kainit, have been used somewhat too freely in the past. Another advantage which may arise from the shortage of kainit will be that more use will be made of wood ashes. Wood ash has many advantages as a fertiliser. Not only does it contain from 4-6½ per cent. of potash in a readily available form—that of carbonate—but the carbonate of lime which it contains—from 20-30 per cent.—is excellent in correcting soil acidity. Therein wood ashes are superior to the German salts. Moreover, wood ash contains about 2 per cent. of phosphoric acid, and hence if used in conjunction with farmyard manure it makes a complete fertiliser. After discussing the



FIG. 42.—SCENE IN MESSRS. BULL'S CONSERVATORY IN MAY.

is commonly supposed that cultivation leads to a reduction in quantity of the alkaloids or other chemical substances, which confer on the plant its medicinal value. This supposition is, however, gratuitous, and by proper methods of cultivation in suitable districts the yield should be not smaller but larger than that obtainable from wild plants.

THE SCOTTISH FRUIT TRADE AND IMPORT RESTRICTIONS.—A meeting of the executive committees of the three principal fruit trade associations in Scotland was held in Glasgow recently, when a resolution regarding the proposed restriction on the importation of fruit was adopted and signed by the following:—The Scottish Fruit Trade Association, ALEXR. M'KAY, president; the Wholesale Fruit Trade Association, T. J. ANDERSON, president; Glasgow Fruit Brokers' Association, DAVID TAYLOR, secretary. The resolution was to the effect that the com-

mittees view with grave concern the suggested restrictions, and respectfully call upon the Government not to take action to curtail existing facilities, and ask that representatives of the trade may be heard before any decision is taken. Mr. RUNCIMAN has since stated that the restrictions will not apply to fruit exported from the Dominions and Colonies.

POTASH IN AGRICULTURE.—Circular No. 7 issued by the Dominion of Canada Experimental Farms is devoted to a consideration of the effects which the stoppage of supplies of potash salts from Germany is likely to have on Canadian agriculture. The author, Dr. SHUTT, the Dominion Chemist, gives reasons for suggesting that the cutting off of this source of potash is not likely to cause much loss to the farmers of the Dominion. He points out that heavy clays

are well supplied with potash, and suggests that an effect of the German embargo will be to cause farmers to have recourse to lower grade potassic manures. This Dr. SHUTT thinks will be by no means a bad thing, since he is of the opinion that high-grade potash manures, such as kainit, have been used somewhat too freely in the past. Another advantage which may arise from the shortage of kainit will be that more use will be made of wood ashes. Wood ash has many advantages as a fertiliser. Not only does it contain from 4-6½ per cent. of potash in a readily available form—that of carbonate—but the carbonate of lime which it contains—from 20-30 per cent.—is excellent in correcting soil acidity. Therein wood ashes are superior to the German salts. Moreover, wood ash contains about 2 per cent. of phosphoric acid, and hence if used in conjunction with farmyard manure it makes a complete fertiliser. After discussing the

CORN CROPS IN AMERICA. The production of Wheat and Oats in Canada in 1915 is finally

estimated at 201,597,000 cwts. and 157,888,000 cwts. respectively, or 133.3 per cent. and 66.1 per cent. more than the production in 1914. The areas of winter Wheat and Rye sown in the United States are estimated respectively at 37,257,000 acres and 3,053,000 acres, or 11.3 per cent. and 3 per cent. less than the corresponding areas sown last year.

WAR ITEMS.—We regret to record the death while on sentry duty in France of Private W. THOMSON, of the 8th K.O.S.B.s, a member of the garden staff at Chevet Park until April, 1915. He was the youngest son of Mr. THOMSON, head gardener at Rossall School, Fleetwood. Also of Lance-Corporal A. MARSON, of 6th K.O.Y.L.I., foreman in the gardens at Chevet Park, and previously of Messrs. DICKSON'S, Chester, who was killed in France.

THE LATE CANON ELLACOMBE.—By a curious inadvertence, we omitted to state last week that the excellent portrait of the late Canon Ellacombe given in these columns was reproduced from a pastel drawing by Mrs. GRAHAM SMITH.

SULPHATE OF COPPER FOR FRENCH VINES.—We understand that there is pressing need among French vinegrowers for supplies of sulphate of copper. Mildew did great damage to the vines last year, and unless the growers are able to combat it by spraying with Bordeaux Mixture the damage this year will be even greater. It is to be hoped that the good offices of the Board of Agriculture may be employed to secure supplies of this commodity to our Allies.

FLORA OF NEW ZEALAND.—The botanical contributions in the forty-seventh volume of the *Transactions of the New Zealand Institute* include a "Revised List of the Norfolk Island Flora," by ROBERT M. LAING. This is much more than a mere catalogue of names. An interesting introduction, from personal observation, contains valuable information on the present vegetation of the Island as compared with the descriptions and collections of the earliest botanical explorers. The author critically discusses the claims of a number of plants not in ENDLER'S *Prodromus Florae Norfolkicae*, or other early writings, to nativity, and in most cases disallows them; justly, we think. The composition of the vegetation presents some striking features and some unexpected absences, or rareness, of certain families, such as the Leguminosae, Myrtaceae, and Compositae. For example, only seven species of Compositae are enumerated, and of these probably no more than two are really indigenous; and it is doubtful whether any Myrtaceous plant is a true native. Against this, forty species of Ferns are recorded. The Norfolk Island Pine, *Araucaria excelsa*, is still abundant from the sea shore to the top of Mount Pitt. An analysis of the species of flowering plants gives the following results: Forty-one per cent. extend beyond Australasia; 29 per cent. are endemic; 14 per cent. are Australasian; 7 per cent. are found only in Norfolk Island and Australasia. Several contributors describe new flowering plants of recent discovery in New Zealand, some of which have already been recorded in these pages; but they include nothing very remarkable. "Investigations on Phormium," "Comparatively Recent Changes in the Vegetation of the Tainui District," "The Ferns of Mangonui County," are the titles of papers of special interest. An account of abnormal forms among Ferns is appended to the last-named paper, and may be worth the attention of cultivators.

THE KENTIA PALMS IN THE SOUTH PACIFIC.—Though a good many years have passed since the introduction into Europe of the ornamental Palms known under the generic names of *Kentia* and *Howea*, very little is known generally on the trade that has been established in their far-distant island homes in the collection and

exportation of the seeds to Europe for horticultural purposes. It seems, however, from a recent article in the *Wide World*, that quite a profitable industry at present exists in Lord Howe Island in the gathering and shipping of these seeds, which is the more remarkable, for, unlike many other species of Palm, they have no real economic value. After referring to the fact that Lord Howe Island was first visited by the British with a view to making it a convict settlement, the writer proceeds to say: "After a time it occurred to a visiting Australian business man that such beautiful Palms as those growing in abundance all over the island ought to have a market value, and a company was formed for the gathering and export of the seed. The enterprise grew, and was ultimately taken over by the Commonwealth Government, which controls it to this day. Original settlers in the island are allowed to remain, but they can neither own nor lease land. To counter-balance this drawback, the Government pays a standard wage for gathering the Palm seed, and also presents every islander, male and female, with shares in the *Kentia* Palm industry." Outsiders, it is said, are now rigorously barred from



THE LATE WILLIAM BULL, FOUNDER OF THE CHELSEA NURSERIES.

settling on the island, or taking any part in the Palm trade, the only course open being to marry an islander. The collecting and packing of the seed for export is thus described: "An islander merely buckles a strap into a loop, slips it over his bare and horny feet, and, using this as a clinging foothold, climbs the Palm after the manner of the monkey on a stick. The hanging bunches of seed are tugged from the Palm, and the gatherer slides to the ground at a tremendous speed. The seeds are now shelled into a sack, which, when sufficiently heavy, usually about 180 lbs., is strapped to a wooden frame and carried on the islander's back over precipitous hills and dales to the sheds. Here they are thoroughly mixed with the decayed root of the Banyan tree, which is found in immense quantities all over the island, and is considered the very best packing for seeds of any kind. They are then bagged, and shipped by whale boat to the monthly steamer, which anchors outside the reef." Though the island is only seven miles long and one mile broad, yet the writer says in this small area "Nature seems to have packed her gifts as in a treasure chest."

THE LAST OF THE GREAT METROPOLITAN NURSERIES.

MESSRS. W. BULL AND SONS, CHELSEA.

It was but a short time ago that gardeners learned with regret of the disappearance of one great Chelsea nursery—that of Messrs. James Veitch and Sons—and now we have to record the loss of another great landmark of horticulture by the closing of the neighbouring nursery and seed business of Messrs. W. Bull and Sons. We are informed by Mr. Edward Bull, the only surviving partner of the firm, that it is his intention to retire from the nursery business on March 31 next, and in future to devote his entire energies to the manufacture of his special plant manure and fumigating compound.

The nursery business was founded by the late William Bull, senior, who took over the nursery and stock of Messrs. John Weeks and Co., King's Road, Chelsea, in the spring of 1861. From the beginning, the firm specialised in new and rare plants. Mr. Bull was a keen, energetic man, and so well did he develop this side of the business that, by importations of new stove and greenhouse plants through his collectors, Shuttleworth and Carden, about the year 1880, he obtained a world-wide reputation. Mr. Bull assisted to a considerable extent in popularising *Odontoglossums*, *Masdevallias*, and other Orchids. In the middle of the last century, and for many years afterwards, stove and greenhouse plants were prime favourites in gardens; and their cultivation for exhibition was encouraged by the action of the firm in offering valuable prizes for collections of their novelties. The founder of the business died after a short illness at the age of seventy-four, on June 1, 1902, leaving the business to his sons, William and Edward Bull. Mr. William Bull, junior, whose health was delicate, took what share he could in the management, but the chief weight of responsibility fell upon Mr. Edward Bull. The elder brother retired in 1909, and died four years afterwards.

Among the many special features which marked this important establishment, now about to close, were the Spring Flower Shows arranged in the principal Orchid houses, which attracted a large number of visitors.

All interested in cultivated plants and cognisant of the enterprise and skill which this firm of nurserymen has exhibited over a period of more than half a century, will learn of this event with regret, and will entertain cordial hopes for the continued prosperity of the surviving representative of the firm.

We reproduce in fig. 41 the illustration of Messrs. Bull's Show House as it appeared to the discerning eye of our artist, Mr. Worthington Smith, in 1873. The text referring to this house states:—

"The first pair of plants indicated represent a matchless pair of *Fourcroya Bedinghausii*, a handsome glaucous-leaved form. The Palm on the right is *Chamaerops humilis*, and its fellow opposite is a beautiful specimen of *Encephalartos majesticus*, with a trunk about 3 feet high and 2½ feet in circumference. Further on, on the left, is a noble specimen of *Musa Ensete*, succeeded by some handsome examples of Tree Ferns, Palms, etc., margined with small flowering plants of Camellias. Amongst the fine Tree Ferns in this house are large, handsome specimens of the new drooping-fronded *Cyathea Burkei*, and *C. Burkei densa*, a plant which has not yet been shown, but which is denser in growth, and produces longer arching fronds."

The annual exhibitions were continued after Mr. Bull's death, and the large winter garden, decorated with stately Palms and Tree Ferns, was utilised for the purpose of a general exhibition, in which many kinds of Orchids were included, although the firm's own magnificent strain of *Hippeastrum* (*Amaryllis*) was the chief attraction.

Hybrid Orchids were raised in considerable

numbers, especially *Odontoglossums*, and some very fine novelties were produced. It was unfortunate, however, that the prevalence of London fog prevented the hybrids from attaining to their full development at Chelsea. This drawback, which applies also to plants other than Orchids, is one reason why it has been decided to close the nursery.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

APPLE D'ARCY SPICE PIPPIN (see pp. 85 and 102).—The flavour of this Apple is far superior to that of many of the best late varieties. We have here several mature trees growing on cultivated ground, and in a grass orchard. In both positions it crops heavily and regularly. The soil is a deep medium loam, on a sandy clay subsoil. Another good point in favour of D'Arcy Spice is its apparent immunity from Apple Scab, for it keeps clean whilst other varieties in the immediate vicinity are affected with the disease. Unfortunately it is not in general favour as a dessert fruit on account of its dull appearance. The colour is a yellowish-green, with brown russet markings, and most people prefer an Apple that is attractive to the eye. It is, however, also excellent for culinary use. I have had no experience of young trees of the variety, so cannot vouch for their quick fruiting. Has *A Southern Grower* tried Brabant Bellefleur as a late dessert Apple? It comes into bearing in succession to Cox's Orange Pippin. It keeps firm and juicy for a long time, and the flavour is good and sweet, whilst in appearance it is handsome, the colour being bright red, streaked with yellow. It is a most prolific cropper here on old trees; but again, as in the case of D'Arcy Spice, I have no experience with young trees. *H. E. Strudwick, Raynham Hall, Norfolk.*

EUCALYPTUS GUNNII.—I should be glad if any of your correspondents would kindly state the height of specimens of *Eucalyptus Gunnii* known to them. There is one in these grounds, 45 feet in height. My employer values it very much, and, unfortunately, on New Year's Day a very heavy gale partly uprooted it, a Yew tree by its side saving it from being blown completely over. The tree was drawn up into position again with chains and pulleys; it was a great weight owing to having such a quantity of seed-vessels on it. After getting it into position wire cables were attached to it for support. To-day one of these has been broken by a terrific gale, but, fortunately, the others have held. *J. Barnard, Mostyn Hall Gardens, N. Wales.*

WHENCE DOES THE APHIS COME? (see p. 85).—With regard to this inquiry let me say that aphides do not appear to deposit their eggs largely on Apple trees (for a number of years I have observed this), but on the surroundings of an orchard or fruit farm. In 1909 and 1910 I was commissioned by the East Suffolk County Council to visit the fruit farms of Mr. Chevalliers at Aspal, near to Stowmarket, especially when the spraying operations were in progress, and, later, to see the results and report. I noticed that the copse around two sides, and partially a third, was a harbour for destructive insects, and this was never sprayed. I made an investigation, and found the undergrowth of the copse swarming with all sorts, and in my report I recommended that a trial of spraying this wild shrubbery should be made, but the Director of Education for East Suffolk did not consider the experiment valuable enough, and it was shelved. In this county, in conjunction with Professor Harper-Gray, entomologist at Armstrong College, I have examined common Willows and Black Poplars planted around the gardens of moderate-sized residences for shelter, where there are gardens containing twelve to fifty Apple and other fruit trees, and there I found the aphid and red spider eggs in great abundance, but very few on the fruit trees. Advice has been given to the owners to either cut down the shelter trees or spray them well; both remedies have been tried, and with success. After many years' ex-

perience amongst fruit, I find it is useless to spray the trees and not spray the immediate surroundings, more especially if there is a copse or shrubbery near. Aphid eggs can now be found in abundance on nettles, amongst Couch Grass, and on the common Bramble and Briar. If *A Southern Grower* has such a plantation adjoining or surrounding his 3,000 trees, I would suggest an examination and spraying. I should be pleased to send him specimens of various wildlings and rough-barked common trees, containing a northern and hard stock of aphid, if he will send me his card. The gardening fraternity gives too little attention to cleanliness of the surroundings; the residents of Durham County, who have plots of land, are gradually becoming converted to the great importance of spraying hedges, ditches, weeds, etc., with the result that cleaner, better, and heavier crops have resulted, both in fruit and vegetables. *John Smith, County Lecturer on Horticulture, Shire Hall, Durham.*

RECENT GALES.—The violent gale of December 27 had unusual effects on evergreen trees in this district. Small and sheltered shrubs escaped, but where exposed to the south and west larger trees are brown and withered. The chief sufferers were the hardiest and most unlikely subjects: Laurels, Portugal Laurels, *Cupressus Lawsoniana*, various *Thuja*s, Irish Yews and large



MR. EDWARD BULL.

(See p. 115.)

old specimens of English Yews are all considerably browned. The fact that such seaside-loving trees as *Cupressus macrocarpa* and *Euonymus*, side by side with the sufferers, came through unscathed, leads one to suspect that the air was salt-laden, and hence the damage. The sea is approximately five miles due south of us; but the direction of the gale was slightly south of west, and a wind from the south-west would cover twelve miles of land before it reached us. It is difficult to understand why, of the numerous south-west winds that we get here, this one should have been so unusually harmful. Perhaps the absence of rain to wash the foliage at the time of the gale may account for it. I have never seen the same trees so affected in a period of over twelve years. I have no information as to whether trees suffered further inland. *Harold Evans, Llanishen, Cardiff.*

—The gale of last week did considerable damage at Kew. It reached its greatest height during the afternoon of February 16, when three Lombardy Poplars and two Elms were uprooted, numerous branches blown down, and many trees disturbed at their bases. The most notable damage was done to Queen Elizabeth's Elm on the lawn between the Palace and Brentford Gate. Tradition credits Queen Mary I. with planting the tree, under the shade of which her sister Elizabeth is said to have sat. Enclosed by a wire fence, the tree has for some years

been a mere wreck. Formerly possessed of a trunk exceeding three yards in diameter, only a portion of the shell remained, from and around which several vigorous growths had developed, the tallest being some 25 feet high. The two largest of these were blown down during the gale, taking with them the greater part of the remaining shell of the old tree. *A.*

—Wednesday, February 16, will long be remembered in this district owing to the disastrous effects of the gale from the north-west. Huge Elms, for which this locality is noted, were uprooted in all directions, many of the main roads being blocked. Many old Droghda employees will remember the two Elms on the Burnham Road, known as Adam and Eve. These were blown across the main road. Two fine specimens of *Cedrus atlantica* in the Cedar Avenue are lying side by side, leaving a large gap in this beautiful avenue; and at the extreme western end another fine Cedar was uprooted and fell across the carriage drive. In its fall it badly damaged two more Cedars in the group. In the Pinetum very little damage was done, only a large Scots Pine being uprooted. In its fall it fortunately missed a fine *Pinus insignis* and a *Sequoia semicervirens*, which were only a few feet away. The gale seemed to reach its maximum strength about midday, when most of the damage was done. *Chas. Page, Droghda.*

HARDINESS OF PRIMULA MALACOIDES.—I read with much interest the remarks of Mr. Brotherton in regard to the hardy nature of *Primula malacoides*, and can add another instance. During the winter 1913-1914 I was at a nursery growing pot plants for shop and market sales in North-East Yorkshire, and *P. malacoides* was one of the subjects largely specialised in. A batch of 5,000 plants was grown in 3-inch pots, principally intended for Christmas and New Year decoration. They were raised very early, pricked off into boxes, and hardened outside before being potted, and when potted were placed back on the exact spot where the boxes stood, a shady border facing north at the back of a lean-to house, thereby being shaded always from the sun's rays, except at about 3-5 o'clock in the afternoon. They thrived well here, and made perfect specimens, full of buds and rich with well-coloured foliage. When housing time came room could not be found for them all, consequently, rather than overcrowd them, the house, a light, airy one on wooden stages, was comfortably filled only, and the remainder left outside to take their chance. The main batch flowered and was sold, and, incidentally, I might mention that many doubles were found, and also the Rosea type, now both exhibited by various firms as novelties. Christmas past, thoughts turned to Easter trade, and the few plants left outside were sought after. I well remember the job of shifting them inside. They were covered with frozen snow, and the balls were frozen hard. Naturally they looked very miserable; there was no foliage visible, but they were placed on a warm shelf facing due south, and frequently watered. The result was astonishing. They all broke away from the base, and flowered equally well with the first batch. Out of the 5,000 not 2 per cent. were killed or lost, in spite of some 1,500 being subjected to constant frost (one morning 16°) and plenty of snow. *Primula malacoides* will not stand coddling, and if it were treated a little more as above it would not get the name of being a "puny, miserable, washy thing" that so many gardeners give it. Give it hardy treatment and you will get perfect specimens in 3 and 4-inch pots, with anything from 6-12 bold spikes of flower, and each spike well furnished with 3-5 whorls. Above all—and here is the point where so many fail—do not use larger than 4-inch pots. If overpotted they go wrong at the base immediately. *B. F. G., Inverness.*

WINTER-FLOWERING BEGONIAS (see p. 62).—Winter-flowering Begonias still appear to be very imperfectly understood. Many gardeners have tried them, failed, and fought shy of them since, regarding them as generally disappointing. Such a reputation is, however, quite unjustified. Flowering as they do from October till Christmas, their brilliant colours in the conservatory

make a welcome change from the ubiquitous *Chrysanthemum*. Success with this type of *Begonia* is largely a matter of the choice of variety. Being all first hybrids, and not directly connected with each other, their individual characteristics are naturally very pronounced. Several of the older varieties certainly do prove disappointing to many growers, and might now with advantage be discarded and replaced by the newer and better-growing sorts. Hence my object in calling attention to the new and beautiful *Begonia Optima*, in my opinion the best variety of this type for decorative purposes. It flourishes in a cool house, where the fire heat does not exceed 50°. The same plants can be exhibited in October and again in December, and then do duty for house decoration. The lovely salmon colour, blending with the bright, silky foliage, has a peculiar charm, especially under artificial light. Last, but not least, it is an easy and prolific propagator, one plant often producing as many as thirty cuttings. Important points in cultivation are fresh air and a moderate temperature. From the time when the cuttings are struck in June until the end of September, a temperature of from 60° to 70° is desirable, when it should be gradually reduced as the plants show signs of flowering, damping discontinued, and full ventilation given whenever possible. During the flowering season a dry, airy atmosphere of

ciate the glorious sight presented by this house of perfectly cultivated and profusely-flowered plants. The house is a span-roofed structure, about 30 feet by 18 feet to 20 feet wide. The centre "bed," as I may term it, is so arranged that it can be filled with water, through which the hot-water pipes run. The plants are on a stage over this tank, the humidity arising from which provides an atmosphere admirably suited to their requirements. Liquid manure is added to the water in the tank, and occasional doses of the same are given to the plants when they require watering. When growth is completed water is gradually withheld, and the tank run dry. The foliage then assumes a dark, leathery tone, present in every plant at the time of my visit. Mr. Matthew Bennett, the head gardener, is to be heartily congratulated on his skill in the cultivation of this magnificent stove flowering plant. The greatest enemy to its successful culture was formerly the bulb mite. I am satisfied that in the majority of cases this pest was favoured by the system prevalent many years ago of plunging the pots in fermenting material and over-watering the plants while in the material, resulting in a sour and uncongenial rooting medium. Mr. Bennett informed me that very shortly before the photograph was taken the plants were bearing 2,000 flowers. *B. Ashton, Lathom Gardens, Ormskirk.*



FIG. 43.—EUCHARIS GRANDIFLORA AT ELMHURST.

not more than 50° is conducive to strong, short stems, bright colours, and healthy growth. A mixture of manure water prepared from cow-dung and soot is a good tonic as the flowering season approaches. Other good, strongly-growing varieties are *B. Emita* (orange-scarlet) and *B. Exquisite* (pink). The new and brilliant *B. Fireflame* also promises well. *B. Mrs. Heal* (carmine), though an old variety, is still a good one, and responds well to cool treatment. If those who have tried and failed will try again with these varieties and heed the above hints I do not think they need fear disappointment. *C. H. Middleton.*

EUCHARIS GRANDIFLORA (see fig. 43).—Whilst staying with one of my sons at Bechmont, Aigbarth, a few days ago, I paid a visit to Elmhurst, the residence of Charles Booth, Esq., in the immediate vicinity. There I saw what must certainly be—as the accompanying photograph demonstrates—one of the best cultivated batches of *Eucharis grandiflora* (amazonica) it has ever been my good fortune to behold. The older gardeners who remember the time when no collection of stove plants was considered complete without a batch of the noble Amazon Lily would appre-

VITIS THUNBERGII (see p. 93).—Within the last two years—unfortunately, I am not at this moment able to give the exact date—*Vitis Thunbergii* has been, for the first time, described and figured in the *Botanical Magazine*. The figure was drawn from a specimen supplied by the, alas! late Canon Ellacombe, in whose garden at Bitton this species has been grown for many years. The plant commonly sold by nurserymen under this name is, as is rightly stated in the *Botanical Magazine* notice, nothing but a very beautiful form of *V. Coignetiae*, most brilliantly coloured in the autumn. The leaves of *Vitis Thunbergii* are very unlike those of *V. Coignetiae*, which are nearly round. They are distinctly three lobed, and I have never in the last forty years seen any brightly-coloured leaves on it, though I have often seen ripe fruit. I hope, sir, that though the *Botanical Magazine*, read by few, has been unable to stamp out this error, the *Gardeners' Chronicle*, read by all, will succeed, for the sake of Bitton and of the Canon. *G. H. W., Flor Bourton.*

GARDENERS AND EXPERIMENTS.—Whilst there is undoubtedly room for innumerable experiments there is much experimentation which is of little value because too little heed is paid

to the retention of control plots or rows which receive normal treatment. Where possible it is preferable to have a crop under experiment which can eventually be weighed, so that a concrete comparison may be made. A year or two back a friend undertook some trials of explosive subsoiling; the soil was gravelly, but was said to repay deep cultivation. His gardener was highly supercilious, and reported that the crops were "about the same on the treated and untreated ground." Nothing was weighed, and whether there was a good or bad effect we know not. So far as results go, the experiment was thrown away. The consideration of side issues may also sometimes be of interest, if not of importance. For instance, in regard to lime-washing of fruit trees, whilst undoubtedly the main object is to block up lurking places on the bark the eventual "side" issue is to put the tree in good condition. A few years back we had a demonstration of lime-washing. The work took place whilst it was freezing, and the wash soon froze on the trees—the eventual adhesion was practically nil. There was no control plot. Some time later the owner told me that the trees had apparently been much benefited notwithstanding, and the thought has since lurked in my mind that a second control patch would be advisable in lime-washing trials, whereon a quantity of lime similar to that put on the trees themselves should be spread directly on the ground round other trees. Anyhow, the lime which fails to the ground is likely to have some effect, and it may be doubtful how far any apparent good result may not really be due to this factor. Lastly, care in making records at the time is always of paramount importance; impressions may amount to delusions. *H. E. D.*

NOMENCLATURE OF APPLES.—Mr. Pearson's interesting note on this question (see p. 106) raises a point of importance. The whole history of fruit nomenclature shows how hopeless it is to try to change a name once the public has taken the bit between its teeth and got off with one. Hogg tried to change the King of the Pippins to Golden Winter Pearmain and the French Crab to Winter Greening without success. The only remedy for the future seems to be that the R.H.S. Fruit Committee should make careful inquiry into the origin and names of such fruits as are submitted to them before awarding certificates of merit. Furthermore, the renaming of fruits without public statement of the fact should be made a criminal offence. Anyone who has spent time in hunting up origins and sifting synonyms will have no mercy for such offenders, and no fate can be too bad for them. Happily these crimes are becoming more rare, but they will not be finally prevented until we have in this country an experimental station where all available fruits are grown for purposes of comparison. *E. A. Bunyard.*

FROST AND THE PLANTS' AWAKENING (see p. 104).—It would be well, perhaps, to keep an open mind on this subject until more investigation has been done and more data brought to light. In dealing with living plants it is so difficult to get all other factors constant, with the experimental factor alone varying (such as the degree of frost), that it is very easy to draw deductions which express only a partial truth. If frost is the factor which is responsible for precocity of growth, we should naturally expect that those districts which have the most severe or the earliest frosts, e.g., the Northern districts, will have the most precocious vegetation, whereas it would seem as if, taking the average season, those which have little or no frosts (the South-Western districts) exhibit the most precocious vegetation. The case of the Rhubarb is often cited, but can we be sure that it is frost, and frost alone, which is the determining factor here? Have any experiments been recorded where certain plants out of a batch have been frozen (in a freezing-chamber) and put into the forcing-chamber with the other plants of the same batch not so treated? It often happens that exposed Rhubarb plants are not really frozen at all, and yet show a precocity of growth. Moreover, plants placed in frost-proof sheds for some weeks have also an advantage over those lifted and forced right away. Then,

with regard to Lily crowns, is it because they are retarded or because they have been frozen, that they develop into vigorous growth? Would other efficient methods of retarding produce different results? In the case of Swede Turnips it would seem as if those which are stored, and, presumably, not frozen, force more readily than those from outside, which are subjected to the influence of frost. What is the factor which has come into operation here? Is it that of drying, or of quickened respiration? It seems, as suggested in your article, that the problem is a complex one, and that there are many factors which influence the plant's awakening, such as: (1) The amount of moisture, both in the soil and in the atmosphere. (2) The number of bright, sunny days, or the number following a rainy period. (3) Temperature. (4) The degree of ripening during the previous season. (5) The presence of a disturbing factor, such as drying, etc. (6) Respiration, and probably any factor tending to increase the sugar contents of the cell sap. *W. H. Johns.*

THE EARLY SEASON.—In Bristol and district many plants are very forward this year. On January 16 *Daphne Mezereum* and the Red-flowering *Ribes* were in flower. By the 27th many Elms were in full blossom. On February 12 I saw Almond in bloom, and two Pear trees distinctly showing flower-buds. To-day, February 22, near Sidcot School, on the slope of Mendip, I saw, among other wild flowers, *Adoxa Moschatellina*, *Arenaria trinervia*, *Viola sylvestris* and *Daffodils* just out; also *Bluebell* leaves 6 inches high. On a wall in the same district a patch of *Aubrietia* was mauve with bloom, and some plants of *Soldanella alpina* I sent from the Alps two years ago to friends at Sidcot are already fully out. The *Moschatel* and Three-veined *Sandwort* are remarkably early, and I never saw *Soldanella* so early. It is interesting to note this February flowering of *Soldanella* in an English garden, some 300 feet above sea level, for at 6,000 feet in Switzerland these plants were flowering in June, and in that country *Soldanella* is, I believe, never seen before May. *H. S. Thompson.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

FEBRUARY 8, 1916. — *Present:* Mr. E. A. Bowles, M.A., F.L.S., F.E.S. (in the chair), Sir Everard im Thurn, Dr. W. Bateson, Dr. Voelcker, Col. Rawson, Messrs. Allard, Hales, Worsley, Hill, Elwes, Worsdell, Fraser, Holmes, Fawcett, and Chittenden (hon. secretary), with Rev. J. Jacob and Mr. W. Barr (visitors).

Death of Canon Ellacombe.—Mr. Bowles referred in sympathetic terms to the death of the oldest member of the Scientific Committee, Rev. Canon Ellacombe, of Bitton. The Committee unanimously desired that a message of sympathy should be sent to his family.

Yellow-flowered Poinciana.—Mr. Fawcett showed a specimen of a yellow-flowered form of *Poinciana regia* from near Bull Bay, Jamaica. As members of the Committee remarked, some forms are also more orange than others.

Forms of *Galanthus* and *Helleborus*.—Mr. H. J. Elwes exhibited several forms of *Galanthus* from his garden and elsewhere, remarking that, in his opinion, too many species had been made by botanists of these plants. The species of *Galanthus* are particularly variable, and Mr. Bowles undertook to examine and report upon those brought by Mr. Elwes.

His report is as follows, grouping the forms under the species to which they belong:—

- 1.—*G. nivalis*, No. 21. Melvillei—a major form of *nivalis* (*Gard. Chron.*, 1879, i., 237.)
5. *Imperati* represents the S. European form. It seems the form Backhouse sent out, not Atkins, by the mis-shapen segments.
4. *Imperati* var. *Boydii*. A seedling (? normally two-flowered). (See Burbidge, *R.H.S. Journal*, 1891, p. 200.)

10. *cilicicus* is an early-flowering Eastern form, with very narrow glaucous leaves. (See Baker, *Gard. Chron.*, 1897, i., 214.)

14. *caucasicus* is a late-flowering Eastern form, which, when robust, produces two flowers from each pair of leaves. (See Baker, *Gard. Chron.*, 1887, i., 313.)

12. The Straffan Snowdrop is a fine form of *caucasicus*. (See *Caucasicus grandis*, Burbidge, *R.H.S. Journal*, 1891, p. 203.)

nivalis hybrids.

8a. "William Thompson" is *nivalis* × *plicatus*. (*Gard. Chron.*, Jan. 1911, fig. 20.)

6. *Maximus*, Baker = *grandiflorus*, Baker. (See *Gard. Chron.*, 1893, xiii., p. 656.)

8b. "Neil Fraser," probably *nivalis* × *caucasicus*.

11.—*G. latifolius*, 15, true. Leaves light green, with bright gloss, small flowers.

2. *G. latifolius* var. *Alleni*. Leaves duller, darker green. (See *Gard. Chron.*, 1891, ix., p. 298, and *Garden*, March, 1902, p. 157.)

22. *G. latifolius* var. *Ikariae*. Leaves revolute, deep green, with large green spots on inner segments, late flowering. (See *Gard. Chron.*, 1893, xiii., p. 506.)

111.—*G. plicatus* Bieb.

20. "Dragon." A seedling of Allen's.

1. *chapelensis*. A major form. (See Allen, *R.H.S. Journal*, 1891, p. 175.)

3. *byzantinus* Baker? A hybrid *plicatus* × *Elwesii*, but breeds true. Leaves of *plicatus*, flowers of *Elwesii*. (See *Gard. Chron.*, 1893, xiii., p. 226.)

IV.—*G. Elwesii*, 11, 13, 16.

9. Var. *Cassaba* has inner segments, almost entirely green. (See *Gard. Chron.*, 1899, p. 165.) There is a robust form, called by S. Arnett *Elwesii Cassaba* *Boydii*.

7. Var. *robustus* = *Elwesii*. (See *Gard. Chron.*, 1893, xiii., p. 226.)

Elwesii hybrids.

17. *Coleborne* var. (? *Elwesii* × *caucasicus*.)

19. Similar, but with wider leaves and more green in inner segments.

V.—*G. Fosteri* Baker.

(?) A hybrid between *Elwesii* and *latifolius*, but more probably a true species. (See *Gard. Chron.*, 1889, vi., p. 458.)

Plantago Root.—Dr. Voelcker drew attention to the change in colour of roots of *Plantago*, which become quite red on exposure to the air owing to the production of anthocyanin.

Double *Primula sinensis*.—Mr. Allard showed the result of crossing a double form of *P. sinensis* with a single. Two double forms are known, one in which several petals are produced within one another, the other in which two rows occur, the inner being reversed in colouring. Mr. Allard had searched over a number of plants of *P. sinensis alba plena*, in which the flowers are of the former type, shown by Messrs. Veitch, and had found one flower with a normal stigma, none with pollen. He pollinated this flower with pollen from a single magenta-flowered plant, and obtained three seeds, which gave two plants bearing normal single flowers tinged white. These were self-pollinated, and gave seventy-four plants, seventy-two of which were single, two double, both white, and with the older form of doubling similar to the double parent in *F₁*.

Origin of *Peloria*, etc.—Colonel H. E. Rawson showed a number of dried specimens to illustrate the various correlations which accompany the growth of supernumerary spurs in *Tropaeolum*. Although a flower with three spurs and no other variation was the first to appear, and out of the first ten flowers only two varied in the number and shape of the petals, as well as having two-spur *peloria*, there seems to be a series of changes which follow. They are:—

1. A change in the distribution of the vascular bundles, which affects the form and size of one of the anterior petals.

2. This change in the anterior petal takes place in other flowers than those with extra spurs, and is passed on by the seed sown in an open garden.

3. The subtending leaf of the *peloric* flowers is suppressed altogether, or is pushed a few millimetres up the pedicel and dwarfed, perhaps 90 per cent.

4. The suppression in (3) is accompanied by a shortening of the internodes, and as many as seven flowers will arise from less than 1 inch of a lateral branch, and of these perhaps four will show two-spur *peloria* and the rest will be normal. Subtending leaves may, or may not, be suppressed or dwarfed.

5. Each additional spur is accompanied by the change of at least one anterior petal into one with the sessile character and obovate shape of the posterior petals. A three-spur flower will sometimes have all five petals sessile, with the vascular bundles coloured and well defined in each.

6. The normal spur is no longer connected with a posterior sepal, but is in line with, and directly extends a posterior petal.

All these modifications, with the exception of the last, which appeared only last summer, have been transmitted by the seed in the open garden. The formation of a spurred petal appears to be the first occurrence of the kind in *Tropaeolum* on record.

***Gaster* sp.**—Mr. Clarence Elliott sent one of the curious fungi, called earth stars, belonging to the genus *Gaster*, in which the outer part of the fruit splits in a stellate fashion, turns back, and carries the inner spore-bearing portion above the surrounding ground.

FEBRUARY 22.—There was an exceedingly good attendance on Tuesday last at the fortnightly meeting of the Royal Horticultural Society in the Vincent Square Hall, Westminster. Spring flowers of many kinds, Tulips, Hyacinths, Freesias, Primulas, and various forced shrubs, including Roses, with the customary Alpines and Perpetual Flowering Carnations, combined to make a very bright and attractive show.

The Orchid Committee recommended two Awards of Merit to novelties, *Laelio-Cattleya Erzerum* and *Odontioda Dora*, and six Medals to groups.

The Floral Committee recommended four Awards of Merit to new or meritorious plants, and twenty-five Medals to collections.

The Fruit and Vegetable Committee had no new fruit or vegetable worthy of award, but recommended one Medal to a collection of Apples.

At the afternoon meeting of Fellows a lecture was delivered by Mr. J. Gurney Wilson, entitled "The Essential Points of Orchid Cultivation."

Floral Committee.

Present: Mr. H. B. May (in the chair), Messrs. G. Reuther, John Green, E. A. Bowles, J. W. Barr, S. Morris, A. G. Jackson, Geo. Harrow, C. R. Fielder, J. W. Moorman, John Head, Thos. Stevenson, John Dickson, Chas. Dixon, H. J. Jones, Arthur Turner, Chas. E. Pearson, W. P. Thomson, J. T. Bennett-Poe, H. Cowley, W. G. Baker, E. H. Jenkins, F. Page Roberts, George Paul, R. Wallace, W. A. Bilney, J. F. McLeod, W. J. Bean, and R. Hooper Pearson.

AWARDS OF MERIT.

Cineraria Matador.—A very decorative, large-flowered variety of cinnabar-red colouring, which was first exhibited at a Ghent Quinquennial Show a number of years ago. An excellent plant was shown by Messrs. ROBERT VEITCH AND SONS, Exeter.

Crocus Arius.—This spring *Crocus* of uncommon colouring is a native of Greece, but as it is said that seedlings are very variable, it is not likely to be in general cultivation. The exterior of the floral segments is a very dark blue colour, while the interior of the flowers is almost white. Shown by Mr. G. REICHER.

Kunzya rosea.—Under this name the COUNTESS OF CRANBROOK exhibited an Australian prostrate shrubby plant, which is an excellent subject for a greenhouse pillar. Nearly all the members of this fairly large genus seed freely, and this provides an easy means of propagation. The individual Pea-shaped flowers are rather small, but the racemes are dainty and graceful. The flowers on the sprays shown are white, flushed with rosy-lilac.

***Primula malacoides* King Albert.**—A very attractive variety of this popular species. The spikes of rosy mauve flowers are exceedingly

floriferous, and the individual flowers are larger than those of the type. Shown by Messrs. JAS. CARTER AND CO.

GROUES.

The following Medals were awarded for collections:—

Silver-gilt Flora Medals to Lady TATE, Streatham Hill (gr. Mr. Wm. Howe), for a large and meritorious exhibit of spring flowers which filled a whole length of tabling. Various Hyacinths, Tulips and Narcissi were massed in great profusion, and variety was given by the inclusion of such plants as *Clivia miniata*, *Freesia refracta* and *Forget-me-Nots*, whilst several well-grown Palms and a bordering of *Nephrolepis* added to the effect of this noteworthy display. To Messrs. R. AND G. CUTBERT, Southgate, Middlesex, who filled a long stretch of low tabling with splendid Tulips in great variety, and a corner space with forced shrubs of many kinds, similar to those we noted at the previous meeting. Of the Tulips, Van der Neer, purplish-violet, Brilliant Star, scarlet, and President, silvery-heliotrope, were especially charming.

Silver Flora Medals to Messrs. R. H. BATH, LTD., Wisbech, for a valuable collection of forced bulbs in bowls of fibre. Messrs. WM. CUTBUSH AND SONS, Highgate, who staged many Carnations, of which the hybrid *Malmaison Sabina* was very prominent; forced shrubs, Alpines, and trusses of Zonal Pelargonium. Messrs. SUTTON AND SONS, Reading, for an excellent display of Primulas. *P. sinensis* varieties predominated, and these were splendid plants. A small collection of such stellata varieties as Ruby Star and White Star illustrated the grace and decorative value of this type. Messrs. R. F. FELTON, LTD., Hanover Square, London, who arranged most artistically magnificent flowering branches of *Eucalyptus longifolium*, *Grevillea angustifolia*, and *Olearia Fortunei* with such spring flowers as *Anemones* and *Ranunculuses*.

Silver Banksian Medals to Messrs. BARR AND SONS, Covent Garden, for seedling and standard varieties of Narcissus, Iris stylosa, and other plants. Messrs. J. CHEAL AND SONS, Crawley, who showed small pot plants and cut sprays of many valuable Conifers, arranged on boards in herbarium style. Messrs. R. GILL AND SONS, Penryn, for brilliantly coloured Rhododendrons from the open and sprays of *Erica codonodes*. Messrs. STUART LOW AND CO., Enfield, who displayed plants of several species of *Acacia*, *Cyclamen*, and cut Carnations. Messrs. H. B. MAY AND SONS, Upper Edmonton, for greenhouse Ferns and *Cyclamen*. Mr. M. PECHARD, Christchurch, for hardy plants. Mr. G. REITH, Keston, for Alpines and uncommon shrubs. Messrs. W. WELLS AND CO., Merstham, who staged fresh and good Carnations. Mr. GEORGE PRINCE, Oxford, for such Roses as Yellow Banksian and Fortune's Yellow in long sprays and blooms of various Tea and H.P. varieties.

Bronze Banksian Medals to Messrs. ALWOOD BROS., Wivelsfield, who continue to stage first-rate cut Carnations. Messrs. CARTER AND CO., Raynes Park, for a dainty arrangement of their new *Primula malacoides* King Albert and *P. sinensis* variety Princess Mary. Messrs. G. JACKMAN AND SON, Woking. Mr. G. W. MILLER, Wisbech, and Messrs. WHITLEDGE AND PAGE for hardy plants. Messrs. J. PIPER AND SONS, Bayswater. Messrs. R. OXFORD, and Messrs. T. S. WARE, LTD., Feltham, for Alpines. Mr. L. R. RUSSELL, Richmond, for *Azalea indica* varieties.

Orchid Committee.

Present: Sir Harry J. Veitch (in the chair), and Sir Jeremiah Colman, Bart., Messrs. Jas. O'Brien (hon. secretary), R. Brogan White, Gurney Wilson, W. Bolton, C. Cookson, J. Wilson Potter, S. W. Flory, W. H. White, C. H. Curtis, A. Dye, H. G. Alexander, J. E. Shill, J. Cypher, J. Charlesworth, Walter Cobb, F. Monteith Ogilvie, T. Armstrong, F. J. Hanbury, E. R. Ashton, Pantia Ralli, R. G. Thwaites, R. A. Rolfe, Stuart Low, and C. J. Lucas.

AWARDS.

AWARDS OF MERIT.

Laelio Cattleya Erzerum (L.-C. Mrs. Temple (L.-C. Trianae), from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells. A very fine flower,

adhering closely to *C. Trianae* in form, but much larger and richer in colour. L.-C. Mrs. Temple (L.-C. Henry Greenwood × *C. Mossiae*) passes on all the good qualities of its *Cattleya* parent, intensified by the *C. Hardyana* of the other parent, and outweighing the rather narrow-petalled *Laelia* element. The broad sepals and petals are light-rose, the lip reddish-purple in front. The base has light-yellow lines running into the darker disc, and the margin is lilac.

Odontodia Dora (Odm. Jasper × *Oda. Fuystekeae*), from Messrs. CHARLESWORTH AND CO., Haywards Heath. This is one of the most perfect in form of the *Odontodas*, and in that respect shows the influence of Odm. *Pescatorei*, which, with *Cochlidia Noezliana*, produced *Oda. Vuystekeae*, and has already proved to be a good parent. The sepals and petals are claret-red, with a slight gold shade, and rose margin and tips. The broad lip is light lilac in front, the crest yellow on claret red ground.

OTHER EXHIBITS.

Baron BRUNO SCHRODER, The Dell, Englefield Green (gr. Mr. J. E. Shill), showed a fine spike of The Dell variety of *Cymbidium Panwelsii*, with twenty-four flowers, taken from a plant with four such spikes, and forming an excellent example of the many finely grown *Cymbidiums* in flower at The Dell.

F. MONTFETH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. R. Balfour), showed two plants of the beautiful white *Lycaste Skinneri* magnifica, which had already obtained a First-class Certificate and been adjudged not only the best white *Lycaste Skinneri*, but the finest in form of any *Lycaste*. The plants bore five and two flowers respectively. Mr. OGILVIE also showed the rare apricot-tinted *Lycaste Skinneri armenica*, and the pure white *Cypripedium Boltonii*.

W. WATERS BUTLER, Esq., Southfield, Edgbaston, Birmingham (gr. Mr. R. H. Jones), sent a fine plant of *Odontoglossum crispum Anzoe*, a large, typical white form, with flowers of good substance. The crest was yellow, and the upper side of the column dark red. The spike, with one branch, bore twenty flowers.

Sir JEREMIAH COLMAN, Bart., Gatton Park, Surrey (gr. Mr. Collier), showed a selection of interesting species, including *Masdevallia ventriculata longicauda*. The slender, claret-coloured flowers had a curiously-formed tubular base and long-tailed petals. In the collection were also the dwarf *Trias picta*, with prettily-spotted flowers, *Sarcochilus Fitzgeraldii* and *S. Hartmannii*, *Eria globifera* and *Coelogyne sparsa*.

MESSRS. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for a fine group of *Odontoglossums*, *Laelio-Cattleyas*, etc., a special feature being the many handsome *Odontodas*, which gave interesting evidence of the beauty and variation to be obtained in that class. Especially good were three forms of *Oda. Jean* (*Oda. Charlesworthii* × *Odm. ardentissimum*), one being cream-colour with red markings, another all claret-colour, and a third mahogany red, with rose lip.

MESSRS. J. AND A. McBEAN, Cooksbridge, gained a Silver Flora Medal for a good group, including many fine *Cymbidium Alexanderi*, the variety *rosam* being specially attractive. The new *Laelio-Cattleya Monica* (*callistoglossa* × *Myra*) was a pretty pale rose flower with dark maroon lip; *Cattleya Cowaniana alba* (*Mossiae Wageneri* × *intertexta Juliettae*), a clear white of good shape, and there were also four forms of *Laelio-Cattleya Beatrice* and the new yellow L.-C. *Jessamine* (*C. chocoensis alba* × L.-C. *Oriens*). Some brilliant *Odontodas* and good *Odontoglossums* were also noted.

MESSRS. JAS. CYRER AND SONS, Cheltenham, were awarded a Silver Flora Medal for an artistically-arranged group of splendidly-grown specimens in which the *Dendrobiums*, so well cultivated by this firm, were prominent. The group included a number of fine forms of *D. nobile*, ranging from the pure white variety virginale to the finely-formed *ratundiflorum* and *Ashworthii*. Of hybrids, *D. splendidissimum* varieties, *D. Melpomene*, the delicately-tinted *D. Ainsworthii* *intertextum* and forms of *D. rubens* were noted, an interesting point in the

specimens being the remarkable advance in stature made by each successive pseudo-bulb.

MESSRS. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells, were awarded a Silver Banksian Medal for a group of hybrid Orchids, the best of which was the new *Laelio-Cattleya Erzerum*. (See Awards.) Among the *Odontoglossums* were several excellent blotched forms and a specially fine *O. harvengtense*. Others noted were *Brasso-Laelia Digbyano-purpurata*, richly-coloured *Odontodia Charlesworthii*, and good examples of *Cypripedium Holdenii* (*callosum Sandersae* × *Maudiae*), with large emerald-green flowers, showing a good deal of white in the dorsal sepal.

MESSRS. STUART LOW AND CO., Jarvisbrook, Sussex, obtained a Silver Banksian Medal for a group of showy Orchids, in which the best were *Laelio-Cattleya Myrrha* (L.-C. *Gottoiana* × *C. Dowiana aurea*), with copper-yellow sepals and rose lip with light lines from the base, and *Cattleya Seligeriae* (*Enid* × *Whitei*), in which the *C. Schilleriana* parent of *C. Whitei* was shown in the lip. *Phalaenopsis Schilleriana*, good *Odontoglossums*, and other showy Orchids were also included.

MESSRS. SANDER AND SONS, St. Albans, were awarded a Bronze Banksian Medal for a selection of *Cymbidiums*, *Phalaenopsis Stuartiana*, and other species, the best exhibit being *Brasso-Laelio-Cattleya Everest* (L.-C. *Canhamiana* × *B.-C. Mrs. J. Leemann*), with a good head of pale-buff flowers tinged with rose.

MESSRS. FLORY AND BLACK, Slough, showed an interesting selection of hybrids, including *Brasso-Cattleyas*, *Cattleyas*, and *Odontodas*, the new and elegant, dark-coloured *Odontoglossum Clotilde*, Langley variety (*Eximium* × *Clytie*), being much admired.

MESSRS. HASSALL AND CO., Southgate, sent *Cattleya Trianae* Sunrise, of fine shape and Peach-blossom colour, *C. Mendelii albescent*, *Brasso-Cattleya Menda*, and *Sophr-Cattleya Cleopatra*.

Fruit and Vegetable Committee.

Present: Mr. A. H. Pearson (in the chair), Messrs. E. Beckett, W. Poupart, Owen Thomas, John Harrison, John Jacques, Edward Harris, A. Bullock, E. A. Bunyard, A. R. Allen, Geo. Kelf, and A. W. Metcalfe.

A *Silver Banksian Medal* was awarded to Messrs. H. CANNELL AND SONS, Eynsford, Kent, who staged an excellent collection of such Apples as Winter Quarrenden, Norfolk Beefing, Dumelow's Seedling, Betty Geeson, Hoary Morning and King Edward VII.

Mr. G. W. MILLER, Wisbech, showed unusually large, yet crisp and brightly coloured stalks of Rhubarb, The Sutton.

MESSRS. BARR AND SONS, Covent Garden, displayed heads of variegated Kale.

LINNEAN.

FEBRUARY 17.—A general meeting of the Linnean Society was held on the above date, Prof. E. B. Poulton, F.R.S., president, in the chair.

The first communication was by Miss CARLOTTA HERRING-BROWNE, entitled "John Bartram: the Pioneer American Botanist," which was communicated by the president, and illustrated with lantern-slides.

The author stated that Bartram was born on March 23, 1699, near Darby, in County Delaware, Pennsylvania.

The old stone farm-house was built in 1731, soon after his thoughts by a chance occurrence during his labours had been turned to the structure of flowers. It was in the same year that his friend, James Logan, procured a copy of Parkinson's *Theatrum* from England as a present for Bartram, and this decided him to make excursions after plants into Maryland and Delaware. Of strong and untiring frame, neither danger nor difficulty kept him back. To receive and grow his discoveries he began before the end of the year to lay out the garden, the charm of which was felt by Washington, Jefferson, and Franklin. Three years later, at Franklin's suggestion, Bartram sent his diaries to Peter Collinson, in London, who, as a Member of the Society of Friends, had connections with Pennsylvania.

This correspondence, to the mutual benefit of both, lasted till the death of the elder man in 1769. Through Collinson he became known to Linnaeus, Gronovius, Dillenius, Sir Hans Sloane, Dr. Solander, Lord Petre, Dr. Fothergill and others.

Many of the American trees were first sent to Europe by Bartram, amongst them being the *Taxodium distichum*, still extant at Mill Hill, in Collinson's old garden. An even finer specimen, which died a few years ago, was 150 feet high and 27 feet in girth; the trunk still stands in the Bartram Garden Park, Philadelphia.

In 1769 Bartram was elected a Member of the Royal Swedish Academy of Science at Stockholm, and the long letter he sent in acknowledgment is in the Society's possession among the Linnean correspondence.

Bartram died when the United States were one year old; he passed away in his old house on September 22, 1777. His life was shortened by the apprehension that his cherished garden might be laid waste by British troops, but his fears were not realised. This garden is now the property of the City of Philadelphia, and is supported as a public park. From time to time the members of the John Bartram Association, many of whom are his lineal descendants, meet to keep his memory green. The moss genus *Bartramia* is his botanical memorial.

The author has devoted many months to searching for memorials of Bartram amongst the archives in this country, and has succeeded in finding many most interesting letters and objects; these will be described in the complete work upon which she is engaged.

A paper by Mr. E. P. STEEBING was entitled "The Infestation of Bamboos in Tidal Waters by *Balanus amphitrite* and *Teredo navalis* in Tenasserim." In the absence of the author this was epitomised by the Zoological Secretary, who stated that the rapid destruction of bamboo piles was a serious loss, and the investigation showed that up to now no species of bamboo is immune. Research is to be continued.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of this society was held at the R.H.S. Hall on Monday, February 14. Mr. Chas. H. Curtis presiding, when ten new members were elected. Two members were allowed to withdraw double the amount of interest earned, viz., £6 18s. 4d. and £3 18s. respectively. Another withdrew £37 from his deposit account; one member who had been lapsed for thirty-two years was allowed to withdraw £10 5s. 8d.; and sums of £13 14s. 3d. and £5 13s. 2d. respectively were passed for payment to the nominees of two deceased members.

The sick pay for the month on the private side amounted to £75 2s. 5d.; State section to £36 0s. 10d.; and maternity benefit to £7 10s.

NATIONAL CHRYSANTHEMUM.

FEBRUARY 21.—On Monday evening last a meeting of the executive committee of the National Chrysanthemum Society took place at Carr's Restaurant, Strand, Mr. T. Bevan presiding.

One-third of the Floral Committee retires annually by rotation. The election of new members was the first business, and resulted in the appointment of Messrs. D. B. Crane, W. Howe, D. Ingamells, F. W. Ladds, K. Luxford, and M. E. Mills. The nomination of members for the Finance, Schedule and Publication Committees resulted in the re-election of those already holding the positions.

It was resolved that a vote of condolence be addressed to the widow and family of the late John Lyne, an old and valued member of the society. The question of an annual outing this summer was adjourned for future consideration. On the question of the new schedule being brought forward it was stated that all the classes will be open at the next show, the restrictions existing in some of them being removed. The committee advised that the subject of educational meetings for next autumn be postponed until its meeting in September.

DEBATING SOCIETIES.

REDHILL GARDENERS' MUTUAL IMPROVEMENT.—A satisfactory balance-sheet was presented at the annual meeting of the Redhill, Reigate, and District Gardeners' Mutual Improvement Association, which was held at the Penrhyn Hall, Redhill. Mr. W. P. Bound, the chairman, presided over a good attendance of members. Two new members having been elected, the chairman referred to the work of the Association during the past year, and said that they had come through very creditably. The hon. secretary presented the annual report of the committee, congratulating the members on the continued success of the Association. The attendance at the meetings during the past year had been rather below the average, owing to the fact that many members had devoted their evenings to patriotic duties. The membership for the year was seventy-eight. Detailed reference was made to the summer outings of the members to Grafton Hall, Merstham House, and to Tilgate House, Crawley, and to "Hospital Night" on October 5, when fruit and vegetables received from many in the neighbourhood were presented to the Redhill and Reigate Hospital. The balance-sheet showed that the expenditure was £20 0s. 6d., and that there was a credit balance of £11 16s. 8d. The chairman moved the adoption of the report, which was agreed to. The chairman stated that the collection made by the members of the Association on behalf of the relief fund was £15 3s. 4d. Of that amount £5 was voted to the Borough Fund, £5 to the County Fund and £3 3s. to the War Emergency Clothing Fund. Mr. Bound was re-elected chairman, Mr. J. Collyer vice chairman, Sir Jeremiah Colman, Bart., president. The following appointments were also made:—Mr. L. Handcock (Librarian), Messrs. J. M. Thompson and J. J. Leslie (auditors), and Mr. W. Kemp, hon. secretary and treasurer. There was a fruit-bottling competition, but there were only two competitors. The President's Cup was awarded to Mr. W. Kemp. As this is the third year in succession Mr. Kemp has won the cup it now becomes his property. The second prize went to Mr. A. Walton, who also took the prize for bottled beans.

BATH GARDENERS'.—The fortnightly meeting of the Bath and District Gardeners' Debating Society was held on Monday evening at the Foresters' Hall, Bath Street, Mr. T. Parrott (chairman) presiding. Mr. F. G. Drew, of University College, Reading, wrote that through indisposition he was obliged to ask the committee to postpone his lecture on "The Pruning of Fruit Trees." In his stead, Mr. J. Ayers (Bishopston), of the Bristol Gardeners' Society, gave a lecture on "Raising Hardy Fruits for Profit." He explained that the land for planting should be of a loamy nature, and he much preferred old pasture land to arable land. The trees should be planted from 8ft. to 12ft. apart each way, according to their size. Any damaged portions of root should be cut away before planting. The trees should be dipped in manure water or in some suitable solution before planting. The best time for planting was from October to March. A selection of suitable varieties for planting was given. Pruning should be done for three years, but after that period this operation should be performed only sparingly. Hints were given on the choice of suitable varieties and on the approximate cost per acre of laying out an orchard. Land liable to flooding should be drained, and the water collected in storage cisterns. The speaker should be well worked, and heavy soil might be worked up into ridges. An appeal was made to gardeners to consider the question of cooperative horticulture, and to take advantage of land banks. The lecturer gave a practical demonstration of the principles of pruning by exhibiting specimens of shoots treated in accordance with his methods. A discussion followed, and Mr. Ayers was thanked for his paper. The following was the prize list: Class 1 (gardeners with one or more assistants): Mr. H. W. Tinglewell (gardeners, T. Parrott), eight pots of *Gloire de Lorraine* Begonias, six points and first class certificate; Mrs. Hatch (gardeners, T. Allen), collection of Apples, six points and certificate of merit; Mr. A. F. Meyer (gardeners, C. Adlam), 12 pots *Primula malacoides*, five points. Class 2 (single-handed gardeners): Mrs. Erskine (gardeners, H. Roper), eight pots of *Primula sinensis*, six points.

Obituary.

JOSEPH KNIGHT.—We regret to record the death of Mr. Joseph Knight, for over twenty-five years a representative of Messrs. John Peed and Son, West Norwood, in the southern counties. Mr. Knight passed suddenly away early on the morning of February 21. He had been at work, and was apparently in vigorous health, to the last. Deceased was respected by a large number of friends, and his genial presence will be keenly missed by all who knew him.

THOMAS J. DIXON.—We regret to learn, from the *American Florist*, of the death, on January 19, of Thomas J. Dixon, an Irish florist, who emigrated to America when about nineteen years of age. He was eighty-two years old at the time of his death.

MARKETS.

COVENT GARDEN, February 23.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal saler-men, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—Ens.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Azalea, white, per doz. bun.	3 0	3 6	— Odontoglossum crispum	4 0	5 0
Camellias, white, per doz.	1 6	1 9	Pelargonium, per doz. bunches, double scarlet	4 0	6 0
Carnations, per doz. blooms, best American varieties	1 3	2 0	Primroses, per doz. bun.	2 0	2 6
— smaller, per doz. bunches	—	—	Richardias (Arums), per doz.	4 0	5 0
— Carola (crimson), extra large	3 0	3 6	Roses, per dozen blooms—	—	—
— Malmaison, per dozen blooms	—	—	— Duchess of Wellington	—	—
— pink	10 0	15 0	— Lady Hillingdon	2 6	4 0
Daffodils, per doz. bunches	—	—	— Liberty	4 0	6 0
— Double Van	2 6	3 0	— Madame A. Chateau	—	—
— Zion	2 6	3 0	— Melody	—	—
— Emperor	2 6	3 0	— Mrs. Russell	—	—
— Golden Spur	2 0	2 6	— My Maryland	—	—
— Henry Irving	1 6	2 0	— Niphetos	3 0	3 6
— Princess	2 0	2 6	— Prince de Bulgarie	—	—
— Sir Watkin	2 6	3 0	— Richmond	4 0	6 0
— Victoria	3 6	4 0	— Sunburst	4 0	6 0
Fuchsias, per doz.	2 0	2 6	— White Crawford	—	—
Freesia, white, per doz. bun.	1 6	2 0	Snowdrops, per doz. bun.	2 0	2 6
Gardenias, per box of 15 and 18 blooms	6 0	7 0	Spiraea, white, per doz. bun.	—	—
Lapageria, per doz. blooms	—	—	Stock, double white, per doz. bunches	—	—
Lilac, white, per doz. sprays	4 0	5 0	Tuberose, per packet, 24 blooms	—	—
Lilium longiflorum, per doz. long	4 6	5 0	Tulip, Darwin's mauve, per doz. blooms	1 6	1 9
— short	4 0	4 6	Tulips, single, white, per doz. bunches	5 0	7 0
— lancifolium album, long	2 0	2 6	— coloured, per doz. bun.	6 0	10 0
— short	2 0	2 6	— double orange, per doz. bun.	10 0	12 0
— lancifolium rubrum, per doz. long	1 6	2 0	— red, per doz. bun.	10 0	12 0
— short	1 6	—	— pink, per doz. bun.	4 0	12 0
Lily-of-the-Valley, per dozen bunches	24 0	—	Violets, per doz. bunches	1 6	2 0
— extra special	15 0	18 0	— double, Marie Louise, per doz. bun.	4 0	6 0
— special	—	—	— Princess of Wales	2 6	4 0
— ordinary	—	—	White Heather, per doz. bun.	1 0	—
Narcissus, Ornatus, per doz. bunches	2 6	3 6			
Orchids, per doz.	12 0	15 0			
— Cattleya	2 0	3 6			
Orchids, Cypripedium	2 0	3 6			

French and Guernsey Flowers.

	s.d.	s.d.		s.d.	s.d.
Anemone, double pink, per doz. bun.	1 0	1 6	— Solbil d'Or (Guernsey), per doz. bun.	1 0	1 6
— de Caen, mix., per doz. bun.	3 6	4 0	Ranunculus, red, per doz. bun.	8 0	9 0
— mauve, per doz. bun.	2 0	2 6	— Barbaux, per doz. bun.	3 0	4 0
Marguerites, yellow, per doz. bunches	1 6	2 0	— carmine, per doz. bun.	3 0	4 0
Mimosa (Acacia), per pad	5 0	6 0	Safrano Roses, per packet, 24s	—	—
Narcissus, Grand Primo, per doz. bun.	1 6	2 6	Stock, white, per pad	5 0	6 0
— Ornatus	1 9	2 0	Violets, Parma, large bun.	2 6	—
— paper white, per pad	6 0	8 0	— single, per pad, 48-60s.	5 0	6 0
			— per doz.	1 6	1 9

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches	7 0	8 0	Carnation foliage, per doz. bunches	4 0	5 0
Agrostis (Fair Grass), per doz. bunches	2 0	4 0	Croton foliage, per doz. bunches	12 0	15 0
Asparagus plumosus, long trails, per half dozen	1 6	2 0	Cycas leaves, per doz.	5 0	12 0
— medium, per doz. bunches	12 0	18 0	Eulalia japonica, per bunch	—	—
— Sprengerii	8 0	12 0	Fern, French, per doz. bunches	0 6	0 8
Berberis, per doz. bun.	4 0	5 0	— common	4 0	5 0
			Gala x leaves, green, per doz. bunches	—	—

Cut Foliage, &c. Average Wholesale Prices—Cont.

	s.d.	s.d.		s.d.	s.d.
Hardy foliage, various, per doz. bun. . .	4	0-8	Myrtle, doz. bun. English, small-leaved . .	6	0
Honesty, per doz. bunches . .	10	0-12	— French, per doz. bunches . .	1	0-13
Lichen Moss, per doz. boxes . .	15	0-18	Smilax, per bun. of 6 trails . .	1	3-16
Moss, gross bunches . .	7	0-8			

REMARKS.—There is little change to record from last week. Supplies of Liliun Harrisii are short, and prices are therefore very high. Home-grown Daffodils are more plentiful. In addition to Golden Spur and Princess, the better lines are Emperor, Empress, Sir Watkin, Victoria, and double Van Zion. White Tulips are a little less plentiful, but there is abundant supply of coloured varieties, both double and single, and of mauve Darwins. There is only a moderate demand for Carnations, and the majority of blooms are very small. Narcissus ornatus is arriving in excellent condition, and the supplies are ample at present. Red Roses, Richmond, Sunburst and Lady Hillingdon are sufficient for the demand, and prices are lower. French flowers are not so plentiful. Paper-white Narcissus is becoming exhausted. The leading sorts now are Anemones, double pink, single mauve, single red, and single mixed (De Caen). Other sorts are white Stock, Freesia and yellow Marguerites.

Plants in Pots, &c. Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Aralia Sieboldii, dozen . .	4	0-6	Ferns, choicer sorts, per doz. . .	8	0-12
Araucaria excelsa, per doz. . .	18	0-21	Ficus repens, 48's, per doz. . .	4	6-5
Asparagus plumosus nanus, per doz. . .	10	0-12	— 60's, per doz. . .	3	0-3
— Sprengeri, per doz. . .	6	0-8	Genistas, 48's, per doz. . .	12	0
Aspidistra, per doz., green . .	21	0-30	— 60's, per doz. . .	6	0-8
— variegated, per doz. . .	30	0-60	— larger, each . .	2	6-7
Azaleas, each . .	2	6-3	Grevillea, 48's, per doz. . .		
Begonia, Gloire de Lorraine, 48's, per doz. . .	10	0-12	Hyacinths, white and coloured, 48's, per doz. . .	10	0-12
Cacti, various, per tray of 15's . .	4	0	Kentia Belmoreana, per doz. . .	4	0-8
— tray of 12's . .	5	0	— Forsteriana, 60's, per doz. . .	4	0-8
Cinerarias, 48's, per doz. . .	9	0-10	— larger, per doz. . .	18	0-36
Cocos Weddelliana, 48's, per doz. . .	18	0-30	— 60's, per doz. . .	8	0-12
— 60's, per doz. . .	8	0-12	Croton, per doz. . .	18	0-30
Cyclamen, per doz. . .	10	0-12	Daffodils, 48's, per doz. . .	8	0-10
Daffodils, 48's, per doz. . .	8	0-10	Dracaena, green, per doz. . .		
Dracaena, green, per doz. . .			Erica, white, 48's, per doz. . .	8	0-10
Erica, white, 48's, per doz. . .	8	0-10	Ferns, in thumbs, per 100 . .	8	0-12
Ferns, in thumbs, per 100 . .	8	0-12	— per 100, in small and large 60's . .	12	0-20
— in 48's, per doz. . .	5	0-6	— in 32's, per doz. . .	10	0-18

REMARKS.—Azaleas, pot Hyacinths, and Daffodils are the chief attractions just now. There is a very small supply of Ferns. No great demand is forthcoming for Cinerarias, Genistas, or Ericas; no doubt the variable weather has somewhat to do with this condition of affairs.

Fruit Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Apples—			Grape Fruit, per case . .	16	0-17
— Albemarle, per barrel . .	40	0-45	Grapes: English, black, per lb. . .	1	6-4
— Californian, per box . .	11	6-12	— Almeria, per brl. of 60 lbs. . .	21	0-25
— English cooking, per bus. . .	7	0-10	Lemons, per case . .	1	0-8
— Nova Scotian, per barrel . .	20	0-25	Lychees, per box . .	1	4-16
— Oregons, per box . .	13	0-16	Melons, Cape . .	2	0-2
— Wenatchee, per case . .	9	0-12	Nectarines, Cape, per box . .	5	0-8
Bananas, bunch—			Nuts, Brazils, new, per cwt. . .	70	0-75
— Medium . .	7	6-10	— Coconuts, per 100 . .	22	0
— X-medium . .	9	0-12	Oranges, per case . .	13	0-50
— Extra . .	10	6-14	— Californian, Seedless, per case . .	24	0-25
— Double X . .	12	0-16	— Palermo Bitters, per case . .	17	0-20
— Giant . .	15	0-16	— Seville . .	40	0
— Red, per ton £20 . .			Peaches, Cape . .	6	0-10
— Jamaica, per ton . .	£16	0	Pears, per case . .	22	0-25
Chestnuts—			— Cape . .	4	0-5
— Italian, per bag . .	23	0	Plums, Cape . .	4	0-8
— Spanish, per bag . .	12	0	Strawberries, forced, per lb. . .	8	0-24
Cobnuts, per lb. 0 5 1/2 . .			Walnuts, Naples, per cwt. . .	70	0
Cranberries, per case . .	11	0-12			
Dates, per doz. boxes . .	4	6-5			

REMARKS.—The chief varieties of English Apples now obtainable are Bramley's Seedling (from Ireland), Dunmelow's Seedling and Newton Wonder. The best of the bottled fruit from overseas consists of Apples York Imperial and Albemarle; of the boxed fruits Newtown Pippin are superior. The Cape and Californian Peas are chiefly Williams' Bon Chretien and

Winter Nelis. Of Cape fruits, the following are to hand this week:—Pears, Grapes, Melons, Plums, Peaches, Nectarines and Mangos, the bulk being mainly Pears. The supplies of English black Grapes are lessening. All grades of Oranges are unusually scarce. Forced Strawberries are available, but in limited quantities only.

Vegetables: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Artichokes, Globe, per doz. . .	4	0-6	Mushrooms, cultivated, per lb. . .	0	9-13
— Jerusalem, per cwt. . .	3	0	— Buttons . .	1	3-16
Asparagus, Paris green, per doz. . .	3	6-4	Mustard and Cress, per doz. punnets . .	1	0
Aubergines, per doz. . .			Onions, English, per cwt. . .	21	0-22
Beetroot, per bag . .	4	6	— spring, per doz. bun. . .	4	0
Beans, Broad, per pad . .	6	0-7	— Valencia, per case . .	20	0-22
— Madeira . .	8	0-10	Parsnips, per bag . .	3	0
Brussels Sprouts, per bus. . .	3	0	Peas, per pad . .	7	0-10
Cabbage, per tally . .	2	6-4	Potatoes—		
Carrots, per doz. . .	2	0-3	— Channel Islands, per lb. . .	0	4-0
Cauliflowers, per tally . .	8	0-14	Radishes, per doz. bun. . .	1	6-2
Celeriac, per doz. . .	6	0	Rhubarb, Forced, per doz. . .	0	10-1
Celery, per fan . .	1	0-1	— natural, per doz. . .	2	6
Chicory, per lb. . .	0	4	Savoy, per tally . .	4	0-6
Cucumbers, per doz. . .	6	0-12	Seakale, per doz. punnets . .	12	0-15
French Beans (Guersey), per lb. . .	3	0-4	Shallots, per sieve . .	3	0-3
Garlic, per lb. . .	0	10-1	Spinach, per bus. .	6	0
Greens, per bag . .	2	6	Tomatoes—		
Herbs, per doz. bun. . .	2	0-6	— Teneriffe, per bundle . .	14	0-17
Horseradish, per bundle . .	3	6-4	Turnips, per cwt. . .	3	0
Leeks, per doz. . .	1	0-2	Turnip Tops, per bag . .	2	6
Lettuce, Cabbage and Cos, per doz. . .	0	6-6	Watercress, per doz. . .	0	6

REMARKS.—Onions, both English and Valencia, are scarce and dear. Teneriffe Tomatoes and Potatoes are arriving in fairly large quantities, and English and French Asparagus is coming in well. Other forced vegetables now available are Peas, Beans, Cucumbers, Potatoes and Mushrooms. All ordinary vegetables are plentiful. E. H. R., Covent Garden Market, February 23, 1916.

Potatoes.

	s.d.	s.d.		s.d.	s.d.
Bedford—			Lincoln—		
King Edward . .	4	6-5	Eclipse . .	4	6-4
Blackland . .	3	6-4	Evergood . .	3	9-4
Dunbar . .	6	3-6	King Edward . .	4	9-5
Kent—			Queen . .	4	6-5
Eclipse . .	4	6-5	Scotch—		
King Edward . .	5	0-5	King Edward . .	4	9-5
Queen . .	4	9-5			

REMARKS.—Trade is still rather quiet, and prices remain about the same. The arrivals are equal to the demand. E. J. Newborn, Covent Garden and St. Pancras, February 23, 1916.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending February 23.

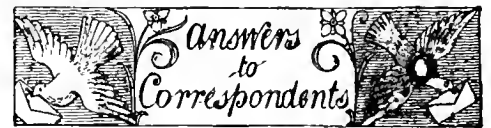
Two and a Half Inches of Snow.—The first three days and nights of the week were warm for the time of year, while on the other hand on the remaining four days and nights the temperature was below the average. On the coldest night the exposed thermometer registered 10° of frost. The ground is at the present time of about average temperature at 1 foot deep, and 1° warmer than is seasonable at 2 feet deep. Rain fell on four days and snow on one day. The total measurement of the rain and melted snow amounted to about 1 inch. On the last day of the week, the 23rd, the ground was covered to the average depth of 2½ inches, or to the same depth as on the 14th inst. During the week 1½ gallon of rainwater and melted snow came through the bare soil percolation gauge, and 1½ gallon through that on which short grass is growing. The sun shone on an average for 2 hours 44 minutes a day, which is 22 minutes a day longer than the mean daily duration for the month. On the first two days of the week the wind was as a rule high, but at no time did the mean velocity for the windiest hour exceed 25 miles—direction west. After that, light airs and calms alone prevailed. The mean amount of moisture in the air at three o'clock in the afternoon fell short of a seasonable quantity for that hour by 1 per cent. E. M.

GARDENING APPOINTMENTS.

Mr. Malcolm Macnaughton, who has had military service with the 26th Black Watch, Royal Highlanders, until recently General Foreman, Hope-toun House, South Queensberry, and formerly Foreman Millerstone, Kelso, as Gardener to the RIGHT HON. THE EARL OF MANSFIELD, Seomra Palace, Perth. [Thanks for 2s. 6d. for R.G.O.F. box.—Eus.]

Mr. A. J. Booker, Gardener for 8 months at The Manor, Wareham, Berks, as Gardener to Colonel BRIDLEY, at The Gardens, Linden Hill, Trafford, Bk.

Mr. F. A. Lown, Gardener to the Bishop of Southwell, Bishop's Manor, Southwell, Nottinghamshire, as Gardener to Mrs. BUCH, Watlington Hall, Downham Market, Norfolk. [Thanks for 1s. sent for R.G.O.F. box.—Eus.]



FUNGUS ATTACKING HORNBEE. A. D. W. The fungus is Stereum frustulosum. It is common on the bark of trees, which it finally kills.

NAME OF FRUITS: Dunedin. Syke House Russet. G. T. S. 1, Tower of Giammi; 2, Sam Young; 3, Striped Beefing; 4, Léon Leclerc de Laval; 5, Glou Morceau.—J. H. 3, Annie Elizabeth; 4, Roi d'Angleterre; 15, Scarlet Nonpareil; 27, Prince Bismarck; 28, 29, Lord Lennox; 31, Small's Admirable; 40, Adams's Pearmain; 43, Murfitt's Seedling.—A. A. Johnstone. Huyshe's Prince of Wales.

NAMES OF PLANTS: Constant Reader. 1, Picea alba; 2, Pinus parviflora; 3, Picea excelsa var. nana; 4, Cupressus pisifera var. plumosa; 5, Pinus parviflora var. glauca; 6, Picea polita; 7, Pinus Murrayana; 8, Picea nigra; 9, Thuja plicata; 10, Juniperus Sabina; 11, J. virginiana, J. var. horizontalis; 12, Cupressus Lawsoniana.—C. Best. 1, Cupressus pisifera var. plumosa aurea; 2, C. p. var. squarrosae; 3, Juniperus chinensis var. albo-marginatus; 4, J. communis var. fastigiata; 5, Thuja orientalis; 6, Azara microphylla.—W. T. H. No. 4 is Eucynus japonicus var. albo-marginatus. It is impossible to name the others from the imperfect specimens sent. Send when in flower.—P. B., Manchester. The flower you send is of a good variety of Dendrobium nobile. Dendrobium splendens is between D. aureum and D. nobile, and although some of the forms approach nearly to D. nobile, there are always traces of the other parent in them.—Moonraker. 1, Cypridium Leeanaum (insigne x Spicerianum); 2, Cypridium Calypso (Boxallii x Spicerianum); 3, Cypridium insigne Dorothy; 4, Cypridium grande (Selenipedium grande) (caudatum x longifolium). The yellow Dendrobium is too shrivelled to identify. Send again in damp moss and describe habit of growth.

ROSES ON THEIR OWN ROOTS: Dorset Gardener.

There is no special advantage in having the new Roses you name upon their own roots, even if they were thus procurable. Good, strong, grafted or budded plants will thrive equally well. If you contemplate forcing these Roses budded plants would be preferable. You should obtain such plants at once, and pot them into 7-inch pots in readiness for next season. Should you desire them to flower this spring your best plan would be to obtain grafted plants established in 8-inch pots. The Roses you require would strike readily from cuttings, taken from the flowering wood, inserted now in 5-inch pots of gritty compost, and given bottom heat either in a propagating frame or in a frame upon a manure heap.

SULPHURIC ACID AS A WEED-KILLER: A. T. H.

Sulphuric acid may be used as a weed-killer on garden paths, and there is no danger of the fumes damaging the plants in the vicinity. If the strength of the acid you have is 25 per cent., you should use one part of the acid to five parts water, adding the acid to the water, and not vice versa. Care must be taken in using the solution not to allow any to touch the hands or clothes of the user, as it is highly corrosive. The vessels used must all be of glass or porcelain, not of metal—an ordinary porcelain jug with a lip will do very well for applying the solution. As the effects wear off in a short time, it is not worth while to cover the whole path; it is better to apply the solution to each individual root of the weeds.

Communications Received.—Ashby—T. S.—Kingston—J. W.—A. O.—A. G.—M. A. Inst.—H. Van O.—R. A. S.—J. C.—P. J. M.—L. P. B.—H. M. V.—W. H. J.—Prof. R. P.—T. H.—M. L.—J. F. M.—B. of A.—S. of A.—K. and Son—Dorset Gardener—W. K.—G. S.—T. F.—A. J. L.—H. R.—E. S. R.—T.—Amherst—Ex. S.—A. C.—F. J.—C. E. W.—T. W. B.

THE

Gardeners' Chronicle

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THE FLORA OF MOUNT KENIA, BRITISH EAST AFRICA.

THE giant Lobelias and Groundsels which constitute such a remarkable feature of the flora of Mt. Kenia are illustrated in figs. 44, 45, 46, 48, and 49, the photographs for which were taken by Mr. C. I. Blackburne-Maze during his recent exploration of the mountain. The explorer's notes which accompanied the photographs are given below.

The first of the giant Lobelias collected on Mt. Kenia was *Lobelia Telekei*, Schweinf. It was found by Von Höhnel, and is figured and described in his account of his expedition (Schweinfurth, in Von Höhnel's *Rudolph See*, p. 861, cum tab.). Subsequently it was collected by Dr. Gregory and Mr. Blackburne-Maze and others. It is a plant (see fig. 45) with an erect, stout stem, which is hollow within, and, according to Von Höhnel, 4 feet to 15 feet high, terminating in a long, simple, spike-like, bracteate raceme of dark violet flowers. The leaves are linear or narrow lanceolate, cuspidate, villous, arranged in a basal rosette. The bracts are linear, with ciliated margins, 4 in. to 6½ in. long, about ten times longer than the flowers. Flowers are shortly pedicellate, and smaller than in the allied species. The petals are dark violet, becoming free towards the apex. This species was found by Dr. Gregory on the south-west side of the mountain, in open peat swamps, at the bottom of the valleys, at an altitude of 11,400 feet to nearly 13,000 feet.

The other figure of a *Lobelia* (fig. 46) is *L. Gregoriana*, Bak. fil. It also has a stout, hollow, unbranched stem 8 feet to 14 feet high, or, according to Mr. Blackburne-Maze, 5 feet to 6 feet, terminating in a long, simple, dense, spiciform, brac-

teate raceme, or almost spike, of violet flowers. The leaves are in a rosette near the base, and are thick, sublyrate obovate, or sublyrate oblong-obovate, clothed with a grey tomentum when young, when older becoming almost glabrous above. Bracts ovate-acuminate, very different from those of *L. Telekei*; flowers violet. This plant grows, together with a tree *Senecio*, on the sides of the valleys, which are generally stony at a height of from 12,500 feet to 13,500 feet, or occasionally slightly higher. Mr. Blackburne-Maze tells me other species of Giant *Lobelia* occur on Mt. Kenia, and specimens of these would be most welcome.

An account of these curious plants will be found in the *Journal of Botany* for March, 1914, but since that date several interesting additions have been made,



FIG. 44.—VEGETATION OF MOUNT KENIA AT ABOUT 14,000 FEET. GIANT GROUNDSELS (*SENECIO* SP.) AND LOBELIAS.

amongst these being *L. Wollastonii*, Bak. fil., from Mt. Ruwenzori.

The tree *Senecios* (see figs. 48 and 49) form also a most striking feature of the vegetation. There are several species on the mountain, and they require further investigation. *Senecio keniensis*, Bak. fil., is closely allied to *S. Johnstonii*, Oliver, from Mt. Kilimanjaro. It grows to a height of 25 feet to 30 feet on the rocky sides of valleys, in sheltered situations, at a height of 13,000 feet to 14,000 feet, at the south-west side of the mountain, associated with *Lobelia Gregoriana*, E. G. Baker.

Mount Kenia, which is nearly 20,000 feet high, is about 90 miles from Nairobi and almost on the Equator. The foot of the mountain may be reached by motor-car. The climb is gradual until the peak is reached, when it becomes steep and difficult, and only practicable for skilled mountaineers. At the beginning of the ascent the climber passes through thick bush, but at 6,000 feet the forest begins,

The Government Forest Station, with a tree nursery, occurs at 7,500 feet; the climate of this zone permits the forester to grow all sorts of our common flowers and vegetables, which flourish in the excellent soil. *Zinnias*, *Eschscholtzias*, *Tropaeolum aduncum* [canariense] grow like weeds. Above the altitude of 7,000 feet the forest becomes more interesting, and consists mainly of enormous *Podocarpus* trees, of great girth and very tall. The trees are festooned with thick hanging Lichens, and are covered with epiphytic Ferns. Columbus monkeys run among the tops of the trees; although common, they are by no means easy to see, owing to the remarkable way in which their covering of long black and white hair, and their long, flowing white tails, match the general

colour of the Lichens. Epiphytic Orchids as well as Ferns are common: but in February, when I was there, there were very few in flower. We had to cut our way along a path thick with giant Stinging-nettles, which sting like bees. These nettles are 8 feet or more in height, with leaves several inches across. The forest also abounds in Tree Ferns, which grow 10 to 12 feet high. There are many *Kniphofias* and other interesting shrubs. At 8,000 feet the forest suddenly gives place to Bamboos, which are very dense and allow nothing to grow with them. Here is the haunt of the elephant, and it is wonderful how quietly it moves among the Bamboos, making scarcely a sound. Leaving the Bamboos behind, the region of the giant Lobelias, *Senecios*, and Heaths is reached. The giant Heaths looked like Conifers, and formed great bushes of the size of Broom. I saw three species of giant *Lobelia*, and several species of *Senecio*. They looked very pretty, dotted about the marshy ground, and they grew so close that we had to cut

many down to pitch our camp. One *Senecio* with a silvery leaf looks, when young, like a gigantic head of a Globe Artichoke, as may be seen in fig. 44. Another (see figs. 48 and 49) is about 15 feet high, with a stem 7 inches in diameter. The *Lobelias* are no less handsome, and are about 6 feet in height. I saw a *Senecio* in the snow by the side of a glacier at an altitude of about 16,000 feet, at which height there was no other vegetation except rough grass, on which the multitudes of rock rabbits doubtless feed. I know nothing of botany, but I was greatly interested in the vegetation of Mount Kenia, and I am certain that a botanist could spend many happy days exploring the remarkable flora of this mountain. C. I. Blackburn-Maze.

J. H. Bowman, Esq., Greenham Common, Newbury. It is of recent origin, and is a *multum in parvo*, suggestive of a botanical garden. It is well stocked with trees, shrubs, herbaceous plants, alpine and bog plants, many of which have been brought from their native habitats by the owner. The geological formation is gravel, like that of the neighbouring common, with a natural stream running through it. This, no doubt, accounts for the success of many of the shrubs, which are of doubtful hardiness in ordinary rich or heavy soils. Samples of these are *Azara microphylla*, 12 feet high; *Desfontainea spinosa*, 4 feet; *Veronica buxifolia*, 6 feet by 5 feet; *Griselinia littoralis*, 6 feet by 6 feet; *Helichrysum rosmarinifolium*, 10 feet; and *Photinia serrulata*, 8 feet, all of which flower freely. The *Helichry-*

high), and *Trochostigma volubile*. The last is also known as *Actinidia volubilis*; it is uncommon in gardens. The greater portion of the upper surface of the leaf is white, turning red late in summer, while the lower surface is wholly green. Conifers are represented by *Cupressus macrocarpa*, 25 feet high, *C. m. lutea*, 18 feet; *Cephalotaxus pedunculata*, 6 feet to 7 feet; *Abies Veitchii*, 25 feet; *Podocarpus chilina*, *Juniperus Sabina procumbens*, 6 feet by 6 feet; and others. The *Cupressus* has been planted about 11 years, the age of the garden. All have a fresh and healthy look, and *Abies Veitchii* bore a crop of small bluish cones. *Yucca filamentosa* is usually regarded as herbaceous, but a plant here carrying five flower stems, 6 feet high, had a distinct trunk, 1 foot high. Amongst many plants, collected in their native habitats, and thriving in the new conditions, were *Linnaea borealis*, fine tufts of *Asplenium septentrionale*, *Cnicus eriophorus*, *C. heterophyllus*, *Juncus filiformis*, *Salix pentandra*, and many others that are more generally cultivated in rock or bog gardens. The red American Oaks, *Quercus coccinea*, *Q. palustris*, and *Q. rubra*, are favourites of the owner J. F.

SHELTER BELTS.

ONE of the most pressing problems in these days is that of providing an effective screen against the dust which is distributed from the highways by motor cars and other traffic. Twenty-five years ago a belt of low trees and six feet shrubs planted in three or four rows was capable of forming a fair protection against the dust nuisance, but in these days a higher and wider belt is absolutely necessary. A shrubbery twenty feet wide is not enough; we must have trees, or the flower-beds and lawns will be powdered with dust. They not only look bad, but are actually destroyed, to say nothing of the unhappy state of the belt itself.

It is no easy matter to rejuvenate an old belt, say one that was planted forty years ago, especially if it is narrow. Yet this is the problem before many a gardener. The trees have grown bare at the base, *Aucubas*, *Laurels*, *Bay Laurels*, and *Pontic Rhododendrons* may have been planted to fill hollows, or to break the view; and now the whole length looks unhealthy and incapable of doing the work for which it was planted. The narrowness of these screens precludes the use of deciduous plants.

If the width of the belt admits of it, one half may be newly planted; and when that has grown enough to hide the view and catch the dust, the other half may be taken in hand. This is comparatively a simple matter, but, as in the case under discussion, where the belt is so narrow that on removing a shrub or two there remains a hole difficult to fill, the question is, how to proceed to effect a fairly good screen with the least possible exposure. Here we have a narrow belt of trees and shrubs running parallel with the highway, on which there is a tram-line. On the far side of the road there is a row of houses. Now it is clear that it is necessary to break the view, both from the top of the tram and the higher windows of the houses. Inside the belt are flower-beds, lawns, a Rose garden, and herbaceous borders.

One can easily imagine that it may not be impossible to plant Lombardy Poplars or *Cupressus macrocarpa* in some districts, but in Cornwall, or at least in some parts of that county, there is one factor militating against such a procedure, and that is the wind. Lombardy Poplars are a complete failure. Thus we have to do the work with other material; or, if we use these plants, we have to head them back. Whatever the conditions, protection, ornament, and interest have to be taken into consideration; to have plants which are interesting and beautiful adds greatly to the charm of the garden. The protec-

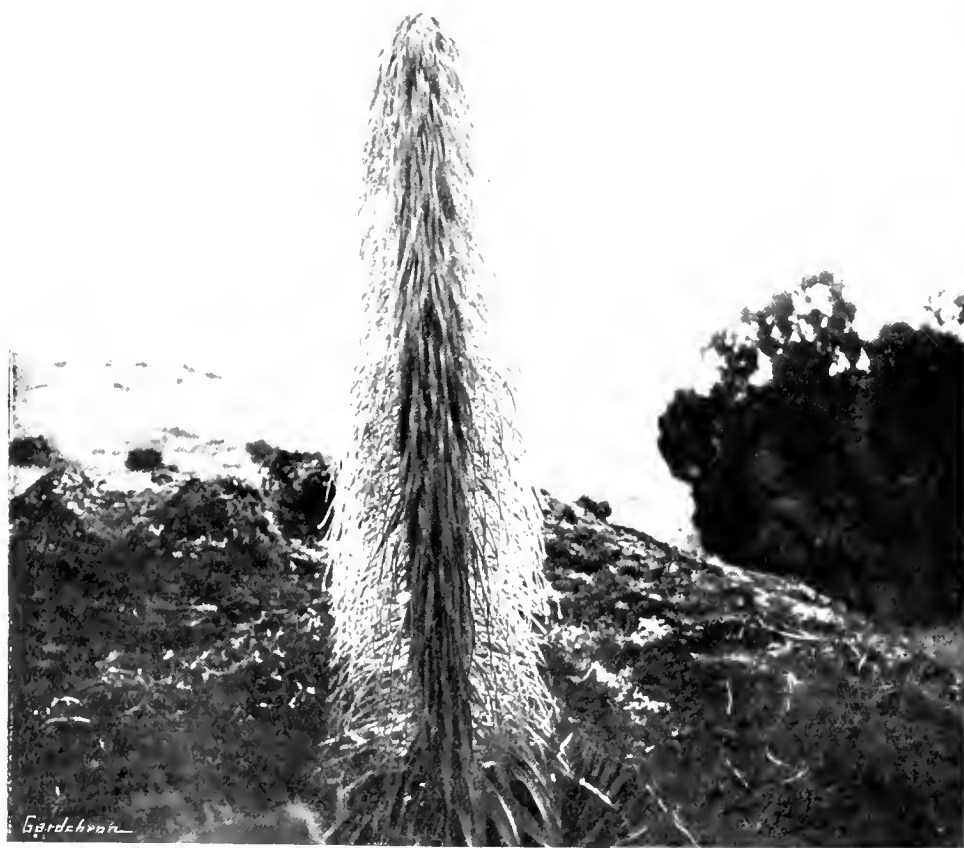


FIG. 45.—GIANT LOBELIA: L. TELEKET SCHWEINF., MOUNT KENIA, 5 TO 6 FEET HIGH.
(See page 125.)

GREENHAM COMMON, NEWBURY.

Most large gardens are obviously the creation of a landscape gardener, and are left to the care of the gardener to maintain and develop; but when the owner himself is interested in horticultural matters, the garden becomes a direct reflex of his own tastes. Such is the garden of

sum was covered with flowers last summer in such profusion as to merit the title of "Snow in Summer," sometimes applied to this Victorian and Tasmanian shrub. Other interesting subjects are *Itea virginica*, *Cotoneaster horizontalis*, *Muehlenbeckia complexa*, *Hamelis mollis*, *Clethra alnifolia*, *Cercis Siliquastrum*, *Quercus coccifera* (brought from the South of France, now 6 feet

tive quality must, of course, have priority; other considerations must be secondary.

Failing the expedient of newly planting the outer or inner half, it is best to decide whether or not the belt can be widened, even to plant clumps here and there along the length in front of the thinnest spots. If this cannot be done, there is nothing for it but to choose the most favourable place to plant a triangular piece having the apex nearest the road, and waiting for that to fill up before newly planting the adjacent ground. By dealing with triangular portions at regular periods it is quite possible to rejuvenate an old screen without unduly exposing the street from the lawn or vice versa.

Whatever the method adopted it is essential that the soil should be well prepared and the plants in the best possible condition. The requirements of the belt itself will govern the method of procedure, but it is desirable that the plants should grow vigorously from the first. No amount of after-care will make up for slovenly planting. Trench the soil at least eighteen inches in depth, and if necessary add good loam and leaf-mould. A fair sprinkling of lime rubble has a good effect upon most plants. In any case a thorough working of the soil, though it may be a slow process, is of the first importance. It is well to remember that the narrower the belt the better should be the condition of the soil and the plants.

The choice of plants is fairly easy; we have plenty to select from to make the plantation both effective and beautiful. *Thuja gigantea*, *Taxus baccata fastigiata*, *T. b. f. aurea*, *Tsuga chinensis*, *Cupressus Lawsoniana*, *C. macrocarpa*, *C. pisifera*, *Picea excelsa*, *Pinus sylvatica*, *Pseudotsuga Douglasii*, *Abies concolor*, *A. nobilis*, *Quercus Ilex*, *Rhododendrons* in variety, *Ligustrums*, *Ruscus aculeatus*, *Viburnum Tinus*, *Aucuba japonica*, *Laurus nobilis*, *Oleacea Haastii*, *Phillyraea angustifolia*, *Hollies*, *Berberis Aquifolia*, *Euonymus* in var., *Ivy*, *Escallonia macrantha*, *E. Montevidiensis*, etc. These are all evergreen. If there is sufficient space, a few deciduous trees and shrubs should be introduced here and there, preferably those with conspicuous flowers, foliage, or fruits, *Catalpas*, *Lilaes*, *Hydrangea*, *Robinias*, *Genistas*, *Philadelphuses*, *Paulownia imperialis*, *Prunus*, *Crataegus*, *Ailanthus glandulosa*, and *Aesculus J. C.*

MR. REGINALD FARRER'S EXPLORATIONS IN CHINA.*

XXXI.—THE HASTENED END.

LEARN, reader, the cold truth. This district has proved a disappointment. The Russian accounts of it are far too radiant: the flora is by no means rich, and not particularly interesting. One could anticipate the fact from afar, when one first saw the pyramidal points of the mountains, and thus learned that their bones were igneous, not calcareous. Indeed, the region has every fault: it is not far enough north for the forests of the Tien Shan and the Ala Shan; it is not far enough south for those of the Kansu Szechuan border. In itself it is isolated, and stands too high: its very valleys run at such an altitude as to be capable of no better shrubs than dull Willows and Poplars and Juniper; while the Alps show a singular lack of distinction in zone. There is here, so high we already are, no differentiation between Alpine and high-Alpine flora; to this last, indeed, belong *Primula tibetica*, *Androsace mucronifolia*, the blue-and-white *Corydal*, and some grisly *Saussureas*; otherwise exactly the same plants that you have at 10,000 feet go with

you all the way to the limits of vegetation, wherever the ground is suitable. The rock is a pervasive blight; dulness and monotony are the proverbial marks of granitic floras. Here, on the rare outbreaks of limestone, we at once, and only, get *Primula urticifolia*, and *Iris "kremnophila."* *Androsace tapete*, and *Isopyrum*; but the chief of the rock is primary, and the big peaks are a ruin of blank desolation, deadlier than anything I have ever seen, deadlier than the Grimsel, and turning the Taroletto into a positive "flowering guardian" by comparison.

Let me be understood. I am not ungrateful.

are such as you would hardly use to screen the scullery. So listen, now, to what I intend to do. This, my second season, is at an end; I close it with a final rush, and proceed to throw in what is, to all intents and purposes, a third; for, instead of proceeding home at leisure, we now mean to hurry off as fast as we can down to the Kansu Szechuan border, where I know of a region unworked, with mountains and limestone and rich forest, and every likelihood of a rich flora. Of course, by the time we get there no flowers will be left, and we shall have to collect all seed-looking seeds we find, on the chance of



FIG. 46—GIANT LOBELIA (*GLOBELIA GREGORIANA* BAKER III), 5-6 FEET HIGH, ON MOUNT KENTIA, ALT. 14,000 FEET.

(See page 125.)

This season has yielded quite a number of plants that should prove of first-class rank for the garden. *Isopyrum*, alone, is as well worth the pilgrimage as any Pope of Rome. But there has been a lack of variety: each encampment and toilsome trapeze has yielded only the beauties that we knew already, and especially am I harassed by a sense of deficiency in flowering shrubs, on which I know that the hearts of many of my friends are set. Now the *Berberids* and *Ribes* of these parts, despite Russian rhapsodies,

their yielding good things. Please note this: My great dread is to burden people with hideous and indiscriminate weeds, but in this third season of autumnal collecting, though I shall use discernment as far as it will serve, no one can expect of me so prophetic an eye as to be able to say for certain whether a given capsule of *Lilac* or *Philadelphus* will yield a *Willmottiae* or a *Wilsonii*. And another thing to note is that I haven't the least intention of telling you where I'm going till I have been there. In about a fortnight I

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 31, November 14 and 28, 1914, January 2, February 27, March 29, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 10, November 13, 20 and 27, December 11 and 25, 1915, and January 8, 15, 22 and 29, and February 5, 12 and 19, 1916.

shall have vanished from mortal ken, and hope to re-emerge again at Peking some time in December. So that this 9th of September sees probably the writing of the last letter in this world's history to the *Gardeners' Chronicle* in London from the Valley of Rocks and Wolves in Thibet.

The season passes out here in a blaze of Gentians. Never have I met such a number of species in a small radius. Evidently *Gentiana* increases as you go northward, even as *Primula* diminishes. In the first place, there are many little biennial Gentians that star the sward with blots of blue and purple—a pale, Chickweedy little tuft in spring, then a rather larger one of amethyst tone, and now a third of soft and steely periwinkle colour amid a big straw-yellow trumpet with very pointed flanges, which is also annual or biennial. Then, of perennials, the cluster-headed group is well represented, and so are the floppets. Among these last there is a purple one, of deep, fine colour, a close cousin to my beauty of last year (F. 303), but inferior in size. Probably these both come very near, if not under, *G. Kurroo*. They are both plants of the hot loess levels; but a bigger and more straggling affair altogether is what I believe to be *G. straminea*, which sprawls out with its sprays of creamy-white trumpets, not only over the downs below, but even in the turf up here. The cluster-heads at present contribute the chief glory to the Alps, which are now, amid the innumerable golden laughter of the Saxifrages, one soft blue sea of an upstanding *Gentian* rather after the way of a glorified *Gentian Pneumonanthe*, but with its big, bunched trumpets all of a muted blue throughout, tinged with a note of indigo. In the Koroanar district this plant (for it seems to be identical) has whitish flowers, and tends to go fat and dwarf at great elevations; here it is usually about 4-5 inches tall, and makes a wonderful effect when you see its blue rufplings over all the face of the Alps, now beginning rapidly to go brown and sere. The valley luxuriates in another cluster-head, which redeems the ill-fame of its group, so notorious in gardens as gawky and graceless great weeds; for, though its flowers are not large, and do not open well, there are such numbers of them, and their tubes are of such a glorious deep, ultramarine blue, and appear on such a crowd of stiff, upstanding stems, that this *Gentian* makes quite a startling show, and ought, like most of its group, to be perfectly easy in the garden.

And the year closes with the grandest *Gentian* of all, among the most splendid flowers I have ever seen. Surely it should be *G. Przewalskii*? But surely the *G. Przewalskii* that I have had was no such miracle of loveliness as this. Perpend this description, ye who possess *G. Przewalskii*, and see if it is thus correctly painted. A tuft of narrow, ovate-pointed leaves, weakly ascendent stems (which means that they do not ascend, but lie prostrate) of some 3 inches in length and 3-8 in number, each turning up at the end, to support one gigantic trumpet, far finer than anything ever achieved by any *G. "acaulis,"* but suggesting that far-off beauty alike in habit and shape and situation in the fine Alpine grass. Outside, the trumpet is freaked with bulging, swelling stripes of nanken buff, separated by heavy lines of black-purple from long vandykes of dam periwinkle blue; inside, the tube and throat are white, and the wide flanges are of so luminous and intense a light azure that you can see the flower from afar, and each time it allures afresh with the indescribable luminosity of its splendour. In colour-tone and shape it is the only *Gentian* that I have seen out here which recalls those of the European Alps. But it far outstrips them all in glory; even *G. verna coelestina* at its best is dim beside this astonishing beauty. It seems universal in the Alpine turf, from 10,000 feet upwards, and how it contrives to set seed when it only begins to open about September 3 I

cannot imagine, and only know that I have not the faintest chance of myself getting any of this loveliness, which stands with *Isopyrum* as the most regal beauty that I have seen this year. *Reginald Farrer.*

NOTICES OF BOOKS.

BOTANICAL TEACHING IN NEW ZEALAND.*

How far botanical teaching is carried on in the Government schools of New Zealand we do not know, but the inhabitants of the Dominion are indebted to their Educational Department for adequate means of obtaining a sound knowledge of the flora, both from a taxonomic and an economic standpoint. Mr. F. T. Cheeseman's excellent *Manual of the New Zealand Flora* appeared in 1906, and even at that period a series of illustrations was in contemplation. But being a subject for serious consideration as to character and scope, it was decided to issue the descriptive volume first. Many plans were discussed, and, finally, Mr. Cheeseman's suggestion of original drawings of a selection was adopted, with, we think, happy results. But it was impossible to find in New Zealand an artist possessing the necessary qualifications. Accordingly the task of making the drawings was offered to Miss M. Smith, and Mr. J. N. Fitch undertook their transfer on stone, under the supervision of Dr. W. B. Hemsley. The result is extremely gratifying, for nothing could exceed the accuracy and charm of Miss Smith's drawings. They are reproduced faithfully by Messrs. West, Newman and Co., and form a valuable feature of the work. Mr. Cheeseman forwarded specimens in batches, and the prints were despatched to New Zealand in the same way, all having reached that country without accident or loss. Mr. Cheeseman opens with an historical, explanatory, and appreciative preface, in which Dr. Hemsley is, by a slip of the pen, designated as the late Assistant Director of Kew. Probably this error arose from the fact that he was on some occasions Acting Director. The illustrations comprise examples of subjects belonging to all the important families of flowering plants represented in the native vegetation of New Zealand, and a number of ferns. The author says: "In selecting the plants to be figured, I have endeavoured to present, as far as possible, a complete view of the main features of the flora," and we think he has succeeded. Representatives of seventy families, 164 genera, and 265 species are figured. Many of the families are limited to one species. Nevertheless, large and difficult families are illustrated pretty fully. Of the preponderating Compositae, for example, no fewer than thirty-five appear, and of the four score or more species of *Veronica* ten are figured. A most useful appendix is a reference list to 1,640 drawings of New Zealand plants which exist in other publications. This is also valuable as a bibliography. Instead of merely formal descriptions, the letterpress presents a mine of information on historical, geographical, and other items of value and interest, including cultural directions. The letterpress generally does not exceed a page to each plate. We note, however, that considerable space is devoted to the elucidation of questions relating to plants of great economic value, such as the Kauri, for example, the letterpress of which runs into seven pages. The text is wonderfully free from errors, though not quite exact and up to date in the geography of several genera.

* *Illustrations of the New Zealand Flora*. Edited by F. T. Cheeseman, with the assistance of W. B. Hemsley, F.R.S. The plates drawn by Miss Matilda Smith. Two volumes, quarto, with 251 plates and letterpress. Published under the authority of the Government of New Zealand. (Wellington, N.Z.: John Mackay, Government Printer, 1914.)

The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Locking House, Wantage, Berkshire.

BOUVARDIA.—*Bouvardia* may be propagated either by cuttings or by dividing the roots. If the latter method is adopted, the roots must be shaken free from the old soil, and cut into small portions. Lay these in shallow boxes or pans filled with fine sand, and place them in a warm house. When ready, pot the young plants into 3-inch pots, and keep them growing gently in a house of moderate warmth.

CHRYSANTHEMUM.—Re-pot young plants of *Chrysanthemums* before they become pot-bound. A compost consisting of fibrous loam, leaf soil, and coarse sand will suit them. The potting must be done firmly, the plants kept close for a few days to recover from the shift, and afterwards grown in cool conditions. The earliest plants may be placed in cold frames, but care must be taken that they do not suffer from cold winds or frost. An occasional syringing with an insecticide will keep them free from aphids. Cuttings will now root readily on a hot-bed in a cold frame, but they must be well protected during cold nights.

CINERARIA.—The later batches of *Cinerarias* will now have filled their pots with roots and must be frequently examined to see if they need water. Liquid manure and soot-water may be given two or three times a week. As the flowers develop, a little concentrated fertiliser will be beneficial. Give the plants plenty of room, or the foliage will suffer. If leaf maggot is present they must be sought for and squeezed between the finger and thumb, or they will disfigure the plants. Admit abundance of air during favourable weather, and shade from bright sun. If it is desired to retard the flowering of the plants as long as possible, they should be placed in a house with a northern aspect.

POINSETTIA.—It is time to proceed with the propagation of a fresh stock of plants. The old plants which have been resting may be placed in a warm, moist house. Thoroughly soak the roots with water, after which little will be required until there are shoots suitable for cuttings, but the plants must be frequently syringed.

PRIMULA OBCONICA.—A sowing of *Primula obconica* may be made now in shallow pans in a finely-sifted, light, sandy compost. Slightly cover the seeds with very fine soil or sand. Place the pans in a warm, moist house, cover them with a sheet of glass, and shade them from bright sun. When the seedlings have pierced the soil, place the pans on a shelf in the greenhouse.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisheld Manor, Basingstoke, Hampshire.

THE DRY WALL GARDEN.—When once the dry wall is constructed this form of gardening is one of the cheapest and most interesting that can be desired. For embellishing the wall some of the commonest plants may be used, even those which rock gardeners are apt to despise. Those who have a horror of seeing *Arabis alpina* or *Cerastium tomentosum* in the rock garden will scarcely deny that they are beautiful when draping a dry wall. To be effective, a dry wall is better if pitched back at an angle instead of being vertical, and the stone should be of a character which is not easily shelled or broken by frost. Where a new rock-garden is made it is often the practice to procure only the nucleus of a stock and to propagate from it. Meanwhile, the space is filled with quite common subjects, which give way to the "gems" when a sufficient stock has been obtained. As we rid the rock-garden of these humble plants we may fill the wall-garden with them. Some of the subjects which can be used for a wall-garden with striking effect are *Arabis alpina*, *Aubrietias* in variety, *Cerastium tomentosum*, *Nepeta Mussinii*, *Violas*,

cornuta and gracilis in their several varieties, Saxifragas, Dianthus deltoides, Linum flavum, and L. perenne, Gypsophila repens, Helianthemums, Centranthus ruber, Draba aizoides, Santolina, Rosemary, Alyssum saxatile, Iberis sempervirens, Ajuga reptans, Arenaria montana, and Phlox subulata. These may thus be still retained in the garden without fear of their overgrowing the rarer and less vigorous plants. Besides these species of a draping habit there are others which may rise from the top of the wall, be snugly ensconced at its foot or jut out from the face.

PLANTS IN FRAMES.—With a view to setting out plants which are now in cold frames at the end of the month or early in April they should be freely ventilated. The remark applies to Sweet Peas, Nepeta Mussinii, Violas and Pentstemons, which may be regarded as hardy. The fact, however, that they have been raised under glass has given them a degree of tenderness which must be dispelled by fairly free exposure. The lights should be drawn off entirely on every possible occasion, and even when they are put on to protect the plants from heavy rain, plenty of air should be allowed by propping up the lights. By ventilating with all possible freedom now it will be possible to get the plants out of doors within a month, and the frame will then be freed for other subjects of more tender constitution. These plants will even now stand several degrees of frost without harm, and in view of the probability that they will have to endure frost when planted out, it is imperative that they be now well hardened. The removal of weeds and a loosening of the surface soil will greatly assist in this direction.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

ONIONS.—Take advantage of the first favourable opportunity to sow the main crop of Onions intended for general use. The soil should be rich and deeply cultivated. Consolidate the surface by treading, and render the surface as fine and level as possible, removing lumps and stones during the process. Draw shallow drills a foot or more apart, into which the seeds should be sown rather thinly. Cover the seeds, and make the surface moderately firm, finally smoothing it over with a fine rake. The practice of patting down the surface after sowing with the back of a spade is not to be recommended, as, if much rain occurs after sowing, followed by drying winds, the plastered surface becomes hard and impermeable, and offers too much resistance to the progress of the seedlings.

WINTER ONIONS should be transferred to their summer quarters as soon as possible, in order to prevent bolting, which often occurs when late transplantation takes place. If exhibition bulbs are required a distance of 18 inches between the rows and 15 inches between the plants in the rows is necessary.

CABBAGES, ETC. Many kinds of Brassicas are tended for early use may be sown when the weather is favourable. Early varieties of Cabbages should succeed the autumn-sown batches, and a small sowing of Red Cabbage can be made if necessary. Brussels Sprouts, two or more varieties of Cauliflower for succession, and autumn Broccoli should be sown now, but defer the sowing of all kinds of Kale, late Savoys, and late Broccoli until later. It is well to sow Brassicas thinly in shallow drills made wide enough apart to allow of frequent hoeing. Afford protection from birds by nets or other means, and guard against the ravages of slugs by frequent dustings of some gritty or distasteful substance.

EARLY CROPS ON HOT-BEDS.—If the weather is unfavourable, many kinds of vegetables which would otherwise be sown out of doors may be sown on the hot-beds, made as directed on page 89. A small sowing of Globe Beet may be made. The roots will quickly mature, and they are appreciated early in the season. Further small sowings of Carrots, Turnips and Dwarf Beans may also be made; and also frequent sowings of some early-maturing variety of Cabbage Lettuce, which will insure a succession of tender salading.

THE ORCHID HOUSES.

By T. W. BRISCOM, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

PHAILOCALANTHE.—Phaiocalanthes are, as the name indicates, hybrids between Phaius and Calanthe. The plants are semi-deciduous, and, unlike many other bi-generic hybrids, do not prove very amenable to cultivation. When they have passed the flowering stage, the roots should be kept moderately dry, reducing the amount of atmosphere. "Black spot" disease occasionally attacks Phaiocalanthes, but where the house is kept moderately dry it is not so prevalent. The diseased parts of the leaves should be cut off, and spots around the pseudo-bulbs removed by scraping, dusting the wounds with powdered charcoal or lime. When growth begins the plants may be repotted.

THUNIA.—Among deciduous Orchids now starting into growth are the Thunias, embracing T. Marshalliana, T. Bensoniae, T. alba, T. Veitchii, T. Brymeriana, and T. Winniana. The plants should be shaken free of the old soil, and the dead roots cut back to within an inch or so of the base of the stem. After this, the bulbs should be graded, and the larger ones given rather more root space. The usual method of cultivation is to place four or five of the strongest stems in a pot 6 inches in diameter, and so on in proportion to the size of the bulbs. The pots are filled to one third of their depth with drainage material, over which is placed a thin layer of fibrous loam to secure the free passage of water. A suitable rooting medium consists of one-half turfy loam and one-half Osmonda-fibre, peat, and Sphagnum-moss, adding sufficient crushed crocks to render the whole mixture porous. The base of the new shoot, which will be an inch or two in length, ought to be on a level with the surface of the soil, and this should be half an inch below the rim of the pot to allow ample space for watering. Each stem must be provided with a small stake to hold it in position until the new growth is well established. After the plants are repotted, place them in a light position in the warmest house, keeping them as near the roof glass as possible. The ordinary plant stove is an ideal place for them during the growing season. For a few weeks only a little water is needed; but directly the roots are seen to penetrate the compost, water must be given in greater quantity, and more frequently. When the receptacles are filled with roots, and the plants growing freely, an occasional dose of weak liquid cow manure (say twice a week) will be beneficial. Thunias like plenty of sunlight, but as the sun becomes stronger a thin shading will be necessary for a few hours during the middle of the day. The plants referred to complete the season's growth in a comparatively short time. For this reason every encouragement must be given, and the plants, having once started, should receive no check of any kind.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NENBURNHOLME, Warton Priory, Yorkshire.

THE GRAPE ROOM.—The mild, damp winter has not been favourable to the keeping of late Grapes, especially bunches of extra size, not well thinned nor well ripened. Examine each bunch at short intervals, and remove mouldy berries. A temperature ranging from 40 to 45 degrees will be high enough, provided the atmosphere can be kept dry. If fire-heat is needed, the best time to warm the pipes is in the early morning, but beyond what is necessary for getting rid of moisture, the less heat used the better.

FERTILISATION. When the flowering stage is reached, a constant circulation of semi-dry warm air is essential. The temperature may be raised to 65° by night for Black Hamburgh and 68° for Muscat of Alexandria, the day temperature being 10° higher, or rather more when the sun is bright and the weather mild. Too much heat and an arid atmosphere are detrimental to setting, and they encourage attacks of red spider. Vines in flower need just enough fire-heat to keep the temperature to the above figures, a circulation of air without cold draughts, and the flowers damped with warm water once or twice a day. All Grapes are improved by artificial fer-

tilisation, while Muscat of Alexandria and other varieties known to be shy may be greatly assisted by charging a camel-hair brush with Black Hamburgh pollen and running this very lightly over the bunches every day, when the temperature has reached the maximum.

EARLY VINES.—Having tied down the shoots and stopped them at the second joint beyond the bunch the next operation is pinching the laterals. These should be removed when small, at the same time retaining any required for laying in if there is room for extension. In this operation good judgment is needed, as shoots and laterals which at first appear thin may be crowded later when the foliage is fully developed. It is therefore better to extend by degrees than to retain more leaves than can receive full exposure to light and air.

LATE VINES.—If late vineries are not already closed, no further time must be lost. They should be coaxed forward by watering with tepid water, and closing the houses early with sun heat and moisture. Varieties such as Lady Downe's and Gros Colman require time as well as heat to bring out their best qualities. Hence the importance of an early start, which allows for the Grapes being cut and bottled before Christmas, thus ensuring an early rest for the vines.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHOTE, Eastwell Park, Kent.

WORK UNDER COVER. Notwithstanding the complete cessation of work out-of-doors, many little jobs may be carried out under cover, which will materially assist in helping the work forward in the spring. Where wooden labels are required, these can all be cut and painted ready for use. For fruit-trees generally, metallic labels of the Acme or Stratford types are much the best, and if possible should be used in preference to wooden tallies. In many instances these latter become useless, and consequently the names are lost through the writing becoming obliterated by exposure or the point rotting in the ground, whereas if metallic labels are fastened on in the first place when the trees are planted, they will last for many years. When winter pruning, it is well to replace any wire fastenings that show signs of decay. Stakes and poles likely to be required for fruit trees and bushes can be pointed, and tied up in bundles of uniform sizes. Binders or long, slender poles should be looked out for supporting nets over the Strawberry beds, or other fruit quarters, where permanent wire-netting is not in use. All nets in stock should be thoroughly overhauled; if small repairs are necessary, a ball of fine twine will serve very well for repairing the nets on the premises. If new nets are required, measurements should be taken, and the order sent off at the earliest possible moment. Orders left over till the nets are required in a hurry will probably never be executed.

AMERICAN BLIGHT OR WOOLLY APHIS.—These insects usually take up their abode in crevices, or under the rough bark of Apple and other fruit trees, and a sharp look-out for any appearance of it should be maintained during the winter-pruning and cleaning. On the first signs of the pest, vigorous measures should be taken to stamp it out, as, if left unchecked for any length of time, it will get a strong foothold, and will eventually do much damage amongst fruit trees. Trees that have been neglected in the matter of winter-cleaning or spraying are likely subjects, as it is in the moss and lichen growths found on such trees that this pest finds suitable hiding and breeding places. Amongst the many remedies recommended I have found nothing so effectual as pure paraffin. The rough bark should be pared off with a knife, and the surface of the infested part painted with paraffin, applied with a half-worn paint brush, working this well in every crevice or likely hiding place. This remedy should be applied in the winter, when the trees are dormant. In the case of badly infested trees, they should be dressed early in the winter, and looked over a second time before growth commences in the spring.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would obviate delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents. — The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MARCH 7—

Roy. Hort. Soc.'s Coms. meet. (Lecture at 3 p.m.) Roy. Inst. (Lecture by Dr. E. J. Russell, on "The Plant and the Soil.") Scottish Hort. Assoc. meet.

WEDNESDAY, MARCH 8—

Sheffield Chrys. Soc. meet. Roy. Hort. Soc.'s Gen. Exam.

THURSDAY, MARCH 9—

B.G.A. (Watford Branch) meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty Years at Greenwich, 40.5.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, March 2 (10 a.m.); Bar. 29.3; temp. 37°. Weather—Misty.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY, AND FRIDAY—

Hardy Bulbs, Herbaceous Plants, Shrubs, and Roses at 67 and 68, Cheap-side, E.C., by Protheroe and Morris, at 12.

MONDAY AND WEDNESDAY—

Rose Trees, Shrubs, Perennials and Fruit Trees at Stevens' Rooms, King Street, Covent Garden.

WEDNESDAY, THURSDAY, AND FRIDAY—

Three days' sale of Nursery Stock, at Woodland Nurseries, Maresfield, near Uckfield, by Protheroe and Morris, at 12.

WEDNESDAY—

Bulbs at 12; Palms at 1.30; Japanese Lihums at 3, at Protheroe and Morris's rooms.

THURSDAY—

Roses, at Protheroe and Morris's rooms, at 1.

FRIDAY—

Orchids, at Protheroe and Morris's rooms, at 1.

The Woburn Report.

The fifteenth report on experiments carried out on the Woburn Experimental Fruit Farm, by the Duke of Bedford and Mr. Spencer Pickering, deals with many interesting subjects.

The evidence given in reference to the question whether there is a tendency towards full and light cropping in certain fruits in alternate years supports the affirmative view commonly held. Mr. Pickering says: "Thus, though the alternation of heavy and light cropping has been remarkably prevalent during the last twenty years, it has not been absolute; and it will be noticed that the fat and lean years are by no means always the same for all varieties." But when he attributes this result to spring frosts, which, he thinks, "must tend to occur alternately in consecutive seasons," it may be asked if an approach to regularity in such a tendency has been noticed by meteorologists. There are many circumstances which interfere with the tendency

of certain fruits to crop heavily and lightly in alternate years; but it is certain that frost has not affected results amongst either Apples or Plums in many orchards known to us, for they are situated in districts almost immune from damaging frosts. In certain orchards there has never been a frost for fifteen seasons four feet from the ground level after even the earliest Apples were in blossom, and on only one occasion were small portions of the Plum crop in the lowest part of the farm injured by frost. Yet several varieties of Apples and all varieties of Plums, after coming to approximately full maturity as regards fruiting, have shown a more or less marked tendency towards alternate heavy and light crops. The matter is further involved because some varieties have their fat yields and others their lean ones in the same season. Further, there are cases in which individual trees of the same variety, at least among Apples, have their heavy yields, and others their light ones, in the same year. Some of the experiments recorded in the report were with trees too young to manifest the tendency to alternate cropping. Moreover, none of the varieties of Apples used in the experiments is among those which usually show the tendency in a marked degree. These are Golden Spire, Allington Pippin, Early Julian, Lord Grosvenor, and, in a less degree, Lane's Prince Albert. The first three show the tendency so strikingly that trees which bear heavily in one season do not even blossom in the next year. The trees in an old orchard, planted fifteen years ago, of the varieties named began to fruit early; but it was not until the eighth or ninth season that the alternate cropping began. Four years ago some of the trees of Allington Pippin were labelled "full," "medium," and "nil" respectively to indicate cropping. In the succeeding season those labelled "full" did not even blossom, while the "medium" had fair crops, and the "nil" heavy crops. The labels are still on the trees, and it was noticed that the alternation continued up to last season. It is among varieties which crop very heavily when they crop at all that the strongest tendency to alternate fruiting should be sought.

The reason why alternate good and bad cropping is not to be looked for among young trees is obvious. Such trees have a large number of vigorous shoots, on which fruit buds develop and ripen without competition from fruit close to them. In the case of an old tree, on the contrary, most of the developing fruit buds have Apples close to them in a very productive season, robbing them of the nutriment essential to their maturing.

Although an "on" and an "off" season for Apples is regularly recognised in the United States, while Plum growers in this country have usually a similar experience, there can never be a perfectly regular alternation in consecutive years, because frost or a very bad insect attack may mar the prospects in what should be a fat year, while all agencies may be

favourable in the anticipated lean year. Apart from such adventitious agencies, moreover, the mixture of trees of different varieties in the same orchard obscures the issue, so that the degree of alternation in cropping or its absence depends upon the proportion of varieties which show that tendency most strongly.

A remarkable example of alternate "lean and fat" years in the fruiting of Apples was cited in these columns, Vol. LII, p. 156, August 24, 1912. The variety was Wealthy, and the tree's yield was as follows:—

Year.	Gallons of fruit.	Year.	Gallons of fruit.
10th ..	33	17th ..	22
11th ..	0	18th ..	96½
12th ..	52	19th ..	1½
13th ..	2	20th ..	75½
14th ..	93	21st ..	5
15th ..	0	22nd ..	118
16th ..	111		

"Or, omitting the tenth year, 545 gallons in the six fat years and 30½ gallons in the six alternating lean years."

Interesting correspondence following the article just quoted may be found in the following number of the *Gardeners' Chronicle*.

The summary of results in five years of cutting back five varieties of Apples at different dates is interesting. The trees were planted in December, 1905, and the growth of new wood is indicated by the figures, 100 being taken as representing cutting back immediately after planting:—February, 100; April, 104; July, 69; a year after planting, 93. For leaf size the corresponding figures in the same order, still taking 100 to represent the trees cut back immediately after planting, are:—100, 102, 94, and 99. For blossoming they are 102, 106, 81, and 79. The results in wood growth and leaf size are best for trees pruned in the April following the planting, worst for those cut back in the following July, and slightly inferior for those cut back a year after planting. In respect of blossoming, the April-pruned trees are again at the top, while those not cut back until a year after planting have come out even worse than the July-pruned trees.

In the seventh report the conclusion drawn from experiments was that the general effect of pruning was to reduce the amount of new wood formed, the size of the tree, and the yield of fruit. In trials now reported, the effect on trees cut back after planting, but not pruned afterwards, was to reduce the growth of wood considerably, according to general experience. Mr. Pickering calls attention to this contradiction, but explains it by the greatly increased blossoming on the unpruned as compared with that of the pruned trees. Growth and fruiting are antagonistic, he adds. Of course they are, and that is partly, if not entirely, why unpruned trees make less growth after they have begun to bear than pruned trees. Tables now published show a greater preponderance of fruiting among lightly pruned than among hard-pruned trees. Summer pruning also tended more towards fruitfulness than winter pruning. Another point brought out is that Apple trees on the paradise stock are more fruit-

ful than those on the crab stock; but this superiority diminishes as the trees grow in age, and it is suggested that the latter, owing to their greater size, will eventually prove the more productive.

PRESENTATION.—Mr. W. MERCER, chairman of the Liverpool Horticultural Association, has relinquished the office, and to mark the occasion, and also of his marriage, the members of the executive, together with the officers of the Liverpool Auxiliary of the G.R.B.I., entertained him at dinner, and presented him with a gold watch, suitably inscribed. Mr. J. DEVANNEY, in making the presentation, referred to the efficient work done by Mr. MERCER during the thirty-five years that the Association had been in existence, and the help he has rendered the Benevolent Institution during the fourteen years he has served as a member of the local committee.

THE ROYAL SOCIETY.—Among the names of those recommended by the Council for election into the Royal Society we note with pleasure those of Mr. MAHON, Director and Government Botanist, the Botanic Garden, Sydney, and of Prof. PEARSON, Hon. Director of the recently established Union Botanic Garden at Kirstenbosch, S. Africa. The establishment of this garden—an account of which was given in these pages (August 23, 1913, p. 132, and August 30, 1913, p. 151) was due, in large measure, to the initiative and pertinacity of Prof. PEARSON. His contributions to the flora of S. Africa have been considerable, and an account of one of his most important tours of exploration in Namaqualand was published in these columns (July 29, 1911, p. 61 *et seq.*). Mr. MAHON, whose contributions to Australian Botany are known to and appreciated by readers of these pages, holds the important post of Government Botanist at Sydney, and Director of the Botanic Gardens, and in addition to his purely systematic work he has made important investigations into the economic flora of Australia. The Royal Society is to be congratulated on this evidence of its powers to "think imperially."

A NEW HORTICULTURAL INSTITUTE.—Just before the war it looked as if horticultural education were at last coming into its own; but, like agricultural and every other form of education, the whole business is now likely to be held up for some considerable time. We hear, however, that a new Agricultural and Horticultural Institution has been started at Usk, in Monmouthshire, under the principalship of Mr. J. C. NEWSHAM, who for many years conducted the work of the Agricultural and Horticultural Institute in Hampshire. The Monmouthshire Institution is endowed, and does not therefore come as a burden on the rates, which probably accounts for its establishment at the present time. In connection with the institution there are some six acres of experimental gardens, which are largely conducted on commercial lines, for the training of students of from fourteen to seventeen years of age, who contemplate taking up market-garden and nursery work. There can be no doubt that in the near future a considerable stimulus will be given to commercial horticulture.

RECENT GALES.—The terrific gale in mid-February uprooted nearly 40 trees, many of them giant elms—in the grounds at Holland House. The destruction was caused almost solely within the space of an hour. Fortunately, the famous London estate is rich in trees, so that the loss of so many will not be irreparable.

CONDITIONS OF EMPLOYMENT AT KEW GARDENS.—The Kew gardeners and labourers have for some time been trying to get a rise of pay or war bonus, and reduced hours of labour

in summer. The wages of gardeners are 21s., and of labourers 24s. and 25s. These have been the rates of pay for the last 10 years or so. The Board has refused to increase the wages, but they have made a slight reduction in the working hours in summer, which will be from 6 a.m. to 5 p.m., instead of 6 p.m. Seeing that wages in the district have been raised about 20 per cent. in consequence of the war, there is a feeling that the Kew gardeners and labourers are not well enough paid.

FLOWERS IN SEASON.—We have received from Messrs. W. MARGER AND SONS, Brookdale Nur-

average temperature for January for the past 75 years is 38.5°, whereas the mean for January of this year is 45.7°—7.2° higher than the average, and 2° higher than in any January since 1841. The average January temperature, 45.7°, is 1.5° higher than that of December, and 6.5° than in November of last year. There have been five Aprils during the last thirty years with a lower average temperature than that of this January.

UNITED STATES GOVERNMENT SEED AWARDS, 1916.—According to a statement in the *Florists' Review*, Chicago, February 3, 1916,



FIG. 47. STREPTOCARPUS CANALICULATUS. S. GARNER & S. DUNN (See p. 135.)

series, Guernsey, a bunch of them Freesia Purita grown entirely without artificial heat. The flowers bear every evidence of good cultivation, and are of the purest white. We are told that the variety has the advantage of being of exceedingly good constitution.

THE WARMTH OF JANUARY, 1916.—A letter written by Mr. CHAS. HARDING to *Nature* (February 24, 1916), draws attention to the fact that record temperatures have occurred frequently during the present winter. Thus, the

awards have just been made by the United States Government Department of Agriculture, of contracts of seeds, 1916-17, for Congressional free distribution. Forty American firms and two foreign firms are successful. The names of the two foreign firms are given as Messrs. KILWAX AND SON, Langport, England, and Messrs. VILMORIN ANDRIEU AND CO., Paris.

FARM SEEDS.—The investigation undertaken by Prof. BREEN, of commercial samples of farm seeds, *Journal of Board of Agric.*, XXII, No. 11,

February, 1916), has led that investigator to conclude that abundant supplies of agricultural seeds of the highest quality are obtainable, but that there is still a considerable market for seeds of a far lower grade, and even for seeds which cannot possibly yield a satisfactory crop. Further, seed of the best quality does not, as a rule, cost much more per pound than the average prices. Under these circumstances it seems extraordinary that seeds which are obviously bad should ever be purchased. In commenting on Prof. BIFFEN's report, the *Journal* points out that farmers may submit seeds for testing free of cost to the Agricultural Colleges and County Agricultural Organisers, and strongly recommends farmers to peruse the special leaflet on Seed Testing (No. 24) issued by the Board of Agriculture.

WAR ITEMS.—We are informed by Mr. J. B. ALLAN, Osberton Gardens, Workson, that official information has been received of the death of Sgt. H. MAYNE, 7th Lincoln, who was killed on Wednesday, February 16, during a counter-attack on the Germans in France. At the time of his death Sgt. MAYNE was in charge of a platoon. MAYNE joined the Army shortly after the outbreak of war, and was very soon promoted to sergeant. At the time of his enlistment he was employed as a journeyman at Osberton Gardens, where he was held in high esteem.

A COSTLY LETTER OF THE ALPHABET.—The letter S appears destined to cost the U.S.A. revenue department several hundred thousand dollars. The origin of this fortune—for the importers, and misfortune for the State—consisted in the addition of the letter S to the word Tulip in the revised tariff. The Act of 1909 referred to . . . Lily of the Valley pips, Tulip, Narcissus bulbs." The phrase now reads as before, except that "Tulips" appears in place of Tulip. Thus Tulips becomes a noun and no longer an adjective of the word bulb, and Tulips no longer require to be paid for at one dollar per 1,000 but only 50 cents. Naturally, the lawyers are eloquent, but the last word so far is with the importer, who saves 50 cents per 1,000.

POTASH FROM PRICKLY PEARS.—In certain parts of Queensland the Prickly Pear (*Opuntia* sp.) is a pest of cultivated land, and is being exterminated by means of spraying with arsenic trichloride. It is found that the ash of this plant contains 15 per cent. of potash, and that so much as seven tons per acre may be recovered. It is estimated (see *Chemical News*, 1915, 112, 81) that the value of the potash should pay the cost of freeing the land from this pest.

RADIUM AND PLANT GROWTH.—The most recent experiments on the effects of radium emanations on plant-growth tend to confirm the conclusions, reached by the older experiments, that the effects are varied, and unpromising from a practical point of view. Thus the work of AGUILON and ROBERT (published in *Ann. Inst. Pasteur, Chem. Abstr.*, 1915, 9, 2772, and summarised in *Pharm. Journal*, January 1, 1916) shows that when germinating seeds are submitted to those radium emanations which traverse glass, the effect consists of a retardation of growth. The addition of a dilute solution of radium bromide to the medium in which the plants are growing produces no effect; but radium emanations proceeding from an open tube, and hence not passed through glass, bring about an activation of growth. The suggestion has been made that this activation may be due to traces of ozone; but chemical tests failed to indicate the presence of this substance in the experimental vessels.

THE PROTOZOA OF THE SOIL.—Dr. RUSSELL's well-known hypothesis of the rôle played by protozoa in limiting soil fertility has led to great activity on the part of zoologists in investigating these soil "animalcules." In a recent paper (*Journ. of Agric. Research*, No. 11, Vol. V.) Mr.

G. P. KOCH describes the results of his investigations into the protozoa of greenhouse and field soils. He finds that active protozoa do occur in greenhouse soils, but only in very limited numbers. From field soils, under normal circumstances, they appear to be absent. He concludes that, at all events in the latter class of soils, the limitation of soil fertility cannot be ascribed to the presence of protozoa or to the destruction by them of beneficial soil bacteria.

DESTRUCTION OF FARM VERMIN.—The importance of keeping down the numbers of vermin of various kinds which take toll of farm and garden produce is insisted on in a leaflet issued by the Board of Agriculture. In addition to the ordinary methods of destroying rats by hunting, trapping, etc., the leaflet cites from the *Scottish Farmer* the following ingenious application of a well-known method:—Shallow trenches are dug about 12 to 14 inches long and 4 inches wide, and covered over with a board, straw, or sticks. A mixture made up of 1 oz. of the coarsest moist sugar with 4 oz. of dry flour, oatmeal or barley meal is then left in the trench each night until the rats eat it readily. The process is omitted for one night, and the following night 1 oz. of finely powdered barium carbonate is thoroughly incorporated with the mixture. As the whole mixture is in a dry state the rats cannot carry it away, but eat it on the spot. Where burrows occur in the open, fumigation by means of carbon bisulphide is recommended. A wasp soaked in this poison is inserted in the highest point of one of the main burrows, and the outlet and inlet closed. In using this substance it should be remembered that it is very poisonous and highly inflammable. For protecting Peas from mice, steeping the seed overnight in a solution of bitter aloes (1 oz. to 2 quarts of water) is recommended. Red-leading the seed, though not referred to in the leaflet, is also an excellent deterrent. The leaflet contains recommendations for the keeping down of sparrows, rooks, larks, wood pigeons and rabbits.

YEW POISONING.—A farm servant at Margam died recently as the result of eating Yew leaves and berries. As the result of a post-mortem examination it was found that the intestines showed acute inflammation, the doctor stating that the cause of death was convulsions. A witness stated that Yew trees had killed cattle on the estate where he was employed, whilst a game-keeper said that the Yew trees were "killing the pheasants."

A NEW FUNGICIDE FOR AMERICAN GOOSEBERRY MILDEW.—Messrs. EYRE AND SALMON, of the South Eastern Agricultural College, Wye, advise (*Journ. of Board of Agric.*, xxii., No. 11) the use of ammonium sulphide as a spray fluid for the control of American Gooseberry Mildew. It is claimed that this substance does not injure the bushes nor stain the fruit as does lime-sulphur. They recommend, therefore, that growers should give it a trial on an experimental scale, and that they should use lime-sulphur for the earlier and ammonium sulphide for later sprayings. To prepare the solution, 1 gallon of a 10 per cent. solution of ammonia in water is saturated with sulphurated hydrogen gas (copper utensils must not be used). When saturated, 2 gallons of 10 per cent. ammonia solution are added, and then 5 gallons of water. To the 3 gallons of liquid so prepared, 1½ lb. of flowers of sulphur are added, and dissolved by shaking the closed vessel. To prepare the spray fluid from this stock solution, 1 lb. of soft soap is dissolved in 19 gallons of water, and 1 gallon of the stock solution is poured in and well mixed with it. The directions are, we fear, likely to strike growers as somewhat complicated, and it is important that they should remember that hydrogen sulphide gas is very poisonous, although, of course, it may be used with impunity by anyone having the requisite experience. In addition to its other merits, this spray fluid has that of

cheapness. Wooden or galvanised iron or tinned iron nozzles must be used and not copper; nor may the vessel containing the fluid be of copper.

THE HISTORY OF PERADENIYA.—Mr. H. F. MACMILLAN, curator of Ceylon Botanic Gardens, contributes to the *Tropical Agriculturist* (Vol. xlv., No. 1), an interesting historical account of those famous gardens from their establishment to the present day. The history of Ceylon botany dates back to the middle of the seventeenth century, at which period the Dutch East India Company engaged Mr. HERMANN to describe the plants and spices of the island. HERMANN's collection of 600 species is now in the British Museum. Other distinguished botanists who contributed to a knowledge of the flora were BURMAN, THUNBERG, and KOENIG. Three years after the advent of the British in 1796, the first botanic garden was established. The site at Peliyagoda proved unsuitable, and was abandoned. In 1810 another garden was established at Slave Island, and was put in charge of a Kew man, Mr. KERR. True to his guild, KERR named the garden Kew, which name still survives in the locality. To MOON, who succeeded KERR in 1816, belongs the honour of discovering Peradeniya, and thither, in course of time (1821) the plants in cultivation in Ceylon were transferred. The successors of MOON were Dr. GARDNER (1844), THWAITES (1850), who established branch gardens at Hakgala—wonderful site—and Henaratgoda, TRIMEN (1880), and WILLIS (1896). The present head of the gardens, the Director of Agriculture in Ceylon, is Mr. LANE, who was appointed in 1912. Since that date the gardens' staff has been reorganised and increased, and Peradeniya has embarked on a new era of usefulness as the seat of the School of Tropical Agriculture.

NEW SOUTH WALES.

"BLUE GUMS."

WITH reference to the question of Blue Gum, raised by you at page 294 of your issue of November 6, perhaps I can throw a little light on the matter. The term Blue Gum is locally given to a large number of trees which have a bluish cast of the trunk or of the foliage, or both. Sometimes the term is a comparative one. One tree may give a man an idea of greater blueness than another. The application is sometimes puzzling, because some Blue Gums may, at certain seasons of the year, have no noticeable bluish cast at all. If I were to make a list of the Blue Gums, so called, that I have come across in my travels, the list would be a very big one, but I will only confine myself to the principal ones. The tree to which the name of Blue Gum was originally given is *Eucalyptus saligna* Sm. This is the Blue Gum of Sydney, and I need scarcely inform you that Sydney was the first settled part of Australia. It gave its name to numerous Blue Gum flats at the head of the Parramatta River and Hawkesbury River District. Subsequently, the name spread further north. *E. saligna*'s blueness chiefly applies to the trunk. Later on, the name Blue Gum was applied to *E. Globulus* Labill., which is the Tasmanian and Victorian Blue Gum, although there is a little of it in cold New South Wales localities a considerable distance from Sydney. The blueness (glaucousness) of *E. Globulus* is greater than in the case of *E. saligna*, and as the tree will stand very much more cold than *E. saligna*, and is very ornamental, the seed was largely exported to Europe, and also to the United States, chiefly through the influence of the late Baron von Mueller, who was the Government Botanist of Victoria, in which State the tree attains remarkable development. The Blue Gum of Queensland is *E. tere-*

ticornis Sm., which is the Forest Red Gum of New South Wales. Now, instead of going north, let us turn west. *E. leucoxylon* is the Blue Gum of South Australia, while Western Australia has one principal Blue Gum, viz., *E. rudis* Endl. Australia is a continent of three millions of square miles. Politically we are all united, and people of the various States are like brothers, but as regards the naming of trees, every State, and, indeed, every district, clings with greater or less tenacity to its own vernacular names. *J. H. Maiden, Director (and Government Botanist), Botanic Gardens, Sydney.*

STREPTOCARPUS CANTABRIGIENSIS.

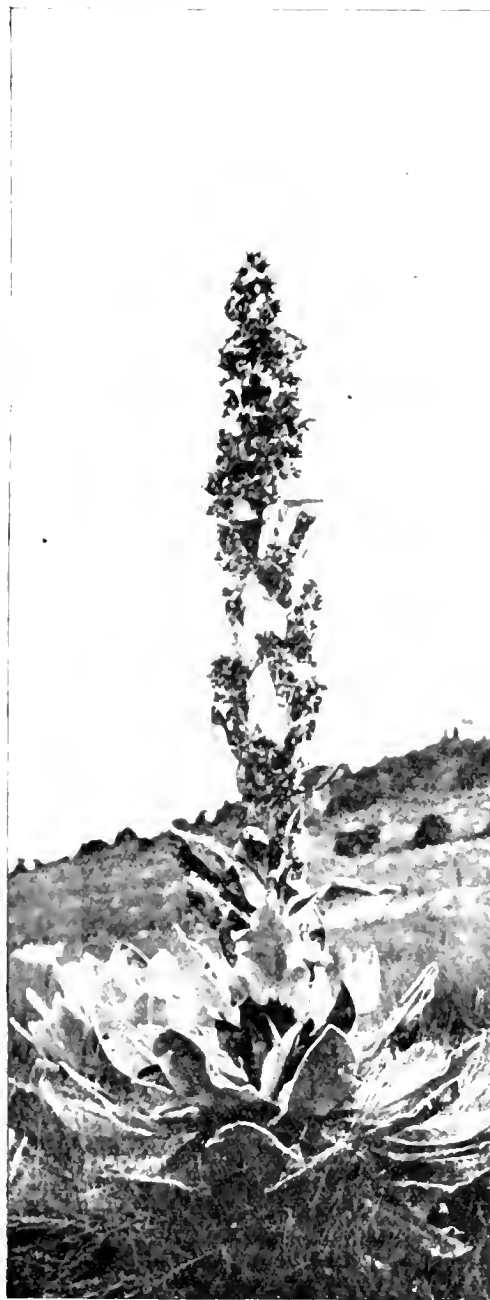
THIS is one of the most charming of the several hybrids of *Streptocarpus* raised by Mr. G. H. Banks, formerly of Cambridge, who is now in charge of the Glasgow Botanic Garden. The parents were *S. cyaneus* and *S. Dunnii*, the latter being the pollen parent. It shows more trace of the *cyaneus* parentage, but the corolla is larger and the tube longer than in that species. The habit of the plant is well shown by the accompanying illustration (see fig. 47). For the photograph I am indebted to one of my foremen, Mr. F. G. Preston. There are several leaves to each plant, 7-8 inches long, and up to 3 inches broad. The height of the inflorescence is about 7 inches, and it carries from two to a dozen flowers. The scapes are conspicuously hairy; the sepals are linear-lanceolate, $\frac{3}{8}$ of an inch long. The corolla is 2 inches long, funnel-shaped, and about $1\frac{3}{8}$ inch across the mouth, the lobes notably rounded; the colour varies to some extent, but the throat is white, with about seven deeply coloured lines on the lower part of the mouth, and the spreading limb is of deep rose. This is one of the neatest in habit among hybrids, and with its numerous rosy flowers present a very bright appearance. *R. Irwin Lynch, Botanic Garden, Cambridge.*

NOTES FROM A COTSWOLD GARDEN.—III.

ANOTHER fortnight of mild weather has been followed by a gale, and now, on February 26, by snow, 8 to 12 inches deep, so that these notes must be taken as written before February 20. In the cold greenhouse a very handsome plant, called *Billbergia nutans*, is in flower. I used to grow this in a warm Orchid-house with other tropical Bromeliads, till I saw it at Mr. Bowles' in the open air; to my great surprise, as all its near allies are from tropical or sub-tropical regions. On looking it up in the *Botanical Magazine*, where it is well figured in t. 6423, I find that its native country was unknown, and that there was then no specimen in London herbaria; but the combination of pink, green, and dark blue in its flowers, and the graceful shape of its inflorescence, make it so handsome, and it is so hardy and easy to grow, that it ought to be a popular plant if better known. It has since been found in S. Brazil, and in the province of Corrientes in Argentine. Anyone who has been fortunate enough to visit the Rev. A. Boscawen's garden at Ludgvan—which, now that Canon Ellacombe is gone, must, I think, on account of the number of rare plants tender in most parts of England, rank as the most interesting parsonage garden in the west of England—will have admired the glorious mass of *Clematis indivisa* on his house, which is often in full flower about the first week in April. But though we cannot here grow it outside, I planted a specimen in the border of a cold lean-to house devoted mainly to succulent plants and bulbs, and here during February and most of March this climbing plant is covered with its long sprays of pure white flowers, with purple anthers, almost a

miniature of that priceless plant, *Clematis Sieboldii* = *florida*, which I have only seen in perfection at Warley Place. Everyone cannot have the latter, at least I cannot keep it alive, but everyone who has room for a climber can have its congener. The latter was at once recognised with joy by a New Zealand officer who visited me recently, and told me that it grew in the Kauri Pine forest of the North Island, where there is another and even more beautiful species. The variety with lobed leaves figured in *Botanical Magazine*, t. 4398, as var. *lobata* does not seem to differ in any other character, and the speci-

stand thoroughly; and though the same selection will never suit everyone, I am going to attempt a selection of those which grow and flower best here. Of the very earliest white-flowered species *Burseria* var. *gloria* is easily first, and *Rochelliana* second. I send a photograph (see fig. 50) of a large tuft of the latter, which was planted about ten years ago by taking half a brick out of a low wall backed by common garden soil, into which the plant was stuck as firmly as possible, and though in very hot summers patches have been burnt out of its centre, the plant has never had a drop of water, which seems to prove that a cool,



FIGS. 48 AND 49.—GIANT GROUNDSELS, *SENECIO* SP., ON MOUNT KENIA. DWARF PLANT 7 FEET HIGH; THE OTHER 15 FEET.

(See page 125.)

mens in Kew herbarium show that the shape of the leaves is very variable in a wild state. It has this great virtue to an amateur, that it is a thoroughly clean plant, and wants no special care beyond heavy pruning to keep down its excessive luxuriance, and this is done here immediately after flowering.

Saxifrages are beginning to make a show, both in the Alpine house and outside. The only fault I can find with them is that there are a great deal too many names, and too many hybrids for anyone but a specialist to know or under-

deep, well-drained run for its roots, and the slight protection of the coping of the wall are the secret of success. In a pot it flowers well for a year or two, when it wants dividing and re-potting. Other Saxifrages planted in the same wall have done well for a time, but none has succeeded like this, the mass being a foot or more from top to bottom. A third white species, or hybrid, the origin of which neither Mr. Boyd nor Mr. Ingram can tell me, is *Boydii alba*, and if a fourth is wanted I would choose *S. apiculata alba*, a hybrid of *Rochelliana* and *sancta*. Among

the earliest yellows, as a pot-plant, Faldonside comes easily first. This is a hybrid raised by Mr. Boyd between *burseriana* and *aretioides*, and the only other that I would place in the first class is *apiculata*, a rampant grower, which has been covered with flowers for a month. *Borisii* and *Kyriillii*, hybrids named after the sons of Ferdinand of Bulgaria, I have no further use for, and neither *Kotschyi*, *Boydii*, nor *Elizabethae* is free-flowering enough here to satisfy me. Amongst the early red-flowered species it is harder to choose: *S. Irvingii* is a little beauty, but I have not had it long enough to know whether it will turn out as good as it looks now, but though *S. Griesbachii* will not be fully out for a month or more, its flower-stems and buds are so outstanding for their beauty, that if I was restricted to only one Saxifrage of this group, I would place it easily first as a pot-plant. It has a peculiarity of

is truly remarkable, but as yet I have not been able to establish it at Colesborne, where perhaps I have coddled it too much.

Leucojum vernum has always been a favourite plant, but never did well or increased much in my garden, until I got the variety known as *carpathicum*, which is normally two-flowered and much more robust. Mr. Bowles speaks of it in his book, *My Garden in Spring*, p. 60, as var. *Vagneri*, which he distinguishes from *carpathicum* by its having green tips to the segments, whilst those of *carpathicum* are yellow. But as this colour seems variable, I wrote to Dr. Stapf, the describer of var. *Vagneri*, which he distinguished by its more robust growth and two-flowered habit. He tells me that in its locus classicus at Haiszt, in Marmaros county, *carpathicum* is either one- or two-flowered, and that *Woloszczak*, in Schrader's *Flora Polonica*

to peat soil. So I end by agreeing with Dr. Stapf, who says, "There may after all be two fairly fixed strains, one with one flower prevalent in the Alps, and another with two flowers" (but sometimes with more, or with only one), "which prevails in the Carpathians, but I should certainly not treat them as species, and neither *Woloszczak* nor I noticed any distinctive character in the marking of the corolla."

I suppose one ought not to let the season of Hellebores go by without saying something about them, but as my garden does not suit them so well as many places, and I have lost by neglect the good seedlings of the Christmas Rose which were sent me years ago by poor Max Leichtlin, the only German I ever knew for whom I had a deep regard and liking, I have nothing out of the common. But there is one which I owe to the late Dr. Regel, namely, *H. guttatus*, which, when it is true and not hybridised—as I believe most of the so-called *guttatus* now in cultivation are—is I think more beautiful than any other Hellebore, on account of the rich purple spotting of its large, open, white flowers. Whether it is a good species, or only a fine form of *caucasicus*, I cannot say; but A. Braun, who discovered it in the Caucasus, where it grows at Helenendorf and in the forests above Tiflis, considered it distinct on account of its retuse and not apiculate anthers, and the Kew Index and Hand-list uphold its specific rank. Anyhow, it is a very fine plant, and if I had to choose only three Hellebores I would take it among them. *H. J. Elwes*.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE EARLY SEASON.—Referring to Mr. H. S. Thompson's note (p. 121) on *Soldanella alpina*, I may say that I had quite a good sprinkling of bloom here during the week ending January 22. I have never previously seen it flower before its usual time; it was, perhaps, the most remarkable of the numerous plants in flower in January. Our plants are from a stock that we have had for some years. The plants are well established in pots plunged in sand on a north border. They have had no covering or protection. *Harold Evans, Llanishen, Cardiff.*

"FROST AND THE PLANTS' AWAKENING."—I have read the article on this subject in the *Gardeners' Chronicle* (p. 104), of February 19, and I must admit that it goes a very little way towards satisfying my curiosity regarding the cause of the phenomenon in question. If I am lacking in gratitude for the partial explanations which the men of science there offer us, it is because the explanations are so very partial that they treat only of the views of one section of biologists, and entirely ignore all that has been written by other men of science representing the mnemonic, or, what I may call the psychological, school of botanists. And it is, I suggest, to the views propounded by the mnemonists that we must look for a rational explanation of the phenomenon under review. This conception—which its most recent exponent, Professor Sir Francis Darwin, has gone far to establish—is that memory and habit are as much attributes of plant life as of that of animals; and that the life of a plant, as that of an animal, is a series of responses to signals or stimuli. The stimulus merely suggests the reaction, and does not directly produce it, just as a knock at the door is simply the signal for its being opened, and does not directly cause the effect. In his address to the Royal Horticultural Society (*Trans.* Vol. 19, p. 345), Sir Francis argued with much force that the effect of darkness in producing etiolation was to be attributed to this mnemonic characteristic of life; and in his presidential address delivered before the Royal Society in 1908 he developed the conception, and sought to make it applicable to morphological changes in general. Coming to the point in question—the awakening effect on certain plants of frost succeeded by a spell of mild weather—I submit that this phenomenon comes within the scope of mnemonics; that the most satisfying explanation



FIG. 50. SAXIFRAGA ROCHEANA AT COLESBORNE.

(See "A Cotswold Garden.")

going off without apparent cause, and no one seems to have quite mastered the secret of its cultivation; but among rock plants it has no superior and very few equals, only one must have good eyes or a magnifying-glass to see its charms, which are, in comparison with most plants, like those of a hummingbird to other birds. I said "as a pot-plant," but three days after writing this I saw on Mr. St. Quintin's rockery at Scampston Hall, in Yorkshire, the finest specimen of the species that I ever saw, with twelve flowering growths. This, he told me, had been planted out for seven years without special care, and had been eaten down to the ground by voles. At the same place, in a small, well-drained peat bed, I saw *Narcissus cyclamineus*, with buds nearly ready to open, and much larger than I saw it in the garden of its introducer, Mr. A. W. Tait, at Oporto. Considering the very warm habitat of the plant in Portugal, its hardness

Besiccata, No. 558, the var. *Vagneri* is rightly identified with *carpathicum*, Herb., which was figured in *Bot. Mag.*, t. 1, 1935, with yellow tips to the perianth segments. Herbert, in his invaluable work on *Amaryllidaceae*, a book too little known to modern gardeners, separates *vernum* and *carpathicum* from *Leucojum aestivum*, under the generic name *Erinosma*, because of its shining testaceous black seeds like those of *Hemerocallis*, and its club-shaped style; and he tells us further that *Erinosma verna* should be planted in peat. This is confirmed by Sir John Stirling Maxwell, who sent me from his garden at Pollok House, near Glasgow, plants from a *Rhododendron* bed which were twice as strong as those growing in ordinary soil at the same place, but not nearly so strong as the variety sent me last year in flower from Begonia by Mr. Fletcher, which bears four or five flowers in my soil as well as in his, and this vigour is not due

is that frost, succeeded by mildness, acts only as a mnemonic stimulus or signal; and that the chemical results are not directly due to the stimulus, but indirectly through the medium of the living principle. To the list of plants precociously in flower, named by Messrs. Brotherston and Evans, might be added the names of a host of trees and shrubs this season in an abnormally advanced state of growth. It is to be remarked, however, that, within the limits of the same genus, species are to be found, each representing a different degree of forwardness, and some of the species in the same genus are still practically dormant, though growing under the same conditions. I have noted this particularly during recent weeks in Clematis, Pyrus, Crataegus, Prunus, Rubus, and Rosa. A striking fact is that our native representatives in these genera are still almost dormant, or, at any rate, among the most backward. Thus Clematis vitalba was at the time of my observation still dormant, whilst Japanese species growing on the same fence had growths a foot long; and, whilst Siberian Crab was green with new growth, the English Crab still showed little sign of moving. This same fact was remarked upon long ago by Thomas Andrew Knight, and I suspect that his suggestion is correct: that trees from those parts of the world experiencing a uniformly cold winter mistake, in our country, the close of an early frost for the beginning of the warm season, and often suffer later for their precocity of growth; whilst our native trees have learned to understand our erratic winter, and do not vegetate until spring is a good deal more advanced. This can only be understood as meaning that the natives of uniformly cold winter climates, profiting by the accumulated experience of countless generations, transmitted by inheritance, have learned to treat the first rise of temperature as a signal for their awakening, and to prepare to make the most of the relatively short season following; whilst by natives of more variable winter climates a rise of temperature is not so readily accepted as a signal for growth. Thomas Andrew Knight, it would appear from this and many similar observations, was one of the earliest apostles, if not the earliest, of the mnemonic theory of plant life. This difference in precocity between one species and another in the same genus offers a reason, it seems to me, for doubting the truth of the explanation given in the article referred to. Were the effect of the stimulus merely physical and chemical, and direct, would it not be fair to expect equal results among allied species? The structure, for instance, of the English Crab must be very similar to that of the Siberian Crab, and yet the effect from frost followed by mildness is by no means the same on both. With special reference to the plants mentioned by Messrs. Evans and Brotherston, it is to be remarked that most are natives of high altitudes or of cold winter climates, and their excitable state following upon a frost would be explained as above. It has only to be added that, just as, in the simile already used, the signal for opening the door may take a multitude of forms, and may appeal to senses of the recipient other than that of hearing, the same effect of awakening may result from stimuli widely different from the one now under discussion. Certain species, for instance, are in nature stimulated by a supply of moisture following on a period of drought. Others are stimulated by a rise of temperature to a definite minimum, following on a prolonged rest, not necessarily in a frosty climate. Etherisation may, I presume, be regarded as effecting such a profound "rest" during a short period that a rise of temperature following acts as a signal for resumed growth. But, whatever the stimulus, I suggest that the result is the same in each case: that its first effect is merely a mnemonic signal to the protoplasm, and that what follows is due entirely to the action thereupon taken by the protoplasm. A. A. P.

—Frost does not explain everything. For instance, one plant of a group of Primula juliae, all propagated from one parent, has been producing flowers for several weeks, and none has appeared up to date on the others. On the same rockery, and on a northern exposure, Impatiens verna has also been in flower for some time, while in the kitchen garden, where the temperature rules 2 degrees higher, not a flower

of it is to be found. On the contrary, Anemone angulosa superba is full of flower in the kitchen garden, and on the rockery only three flowers have expanded. So it would appear that something in the plant is necessary for it to respond to freezing. When woody vegetation is examined it is remarkable that Apricots have scarcely moved, while Peaches are more advanced than usual, so much so that I found an open blossom to-day. Still more curious is the behaviour of a flowering Currant, some shoots of which were shortened in autumn, the foliage and inflorescence on these being more advanced than on the unpruned shoots. In England the temperature according to all accounts has been higher than usual. Here, though frost did not occur, the temperature was low, seldom above 40°, yet the frost had gone only a short time when vegetation was making rapid progress. R. P. Brotherston.

SULPHATE OF AMMONIA (see p. 106).—I have been a user of sulphate of ammonia for a considerable time on a small scale, but it is only this year that I am attempting its use on a larger scale, that is, for field purposes. Mr. Molyneux's advice was very timely, as far as I am concerned, but I should like the writer to have been a little more explicit as to whether he advises its use for wheat. The price of the sulphate is high just now, and beyond the reach of the average working farmer, unless the results are certain to repay the expenditure, hence my request for an explicit opinion upon its use for wheat before making what might prove so costly an experiment. A. Cranston, Brightwell Park Gardens, Brightwell Baldwin, Oxon.

THE BEST PERPETUAL-FLOWERING CARNATIONS. With reference to *Market Grower's* selection of Carnations (see p. 102), I quite agree with most of the sorts recommended, but there are a few points that no market grower, still less a private gardener, should overlook. For instance, your correspondent says that May Day is the best of its colour, but I think that it would be difficult to find first quality flowers of this variety after, say, the middle of December and from that time until March, I consider Enchantress Supreme a much better variety. An improved May Day is illustrated in the *Gardeners' Chronicle*, Dec. 18, 1915, p. 383. It is, however, in the matter of white varieties that I chiefly disagree with your correspondent. By universal consent White Wonder is the best white, taking habit into consideration. Individual flowers of White Perfection are sometimes of a little better quality, but this variety is not so free, and produces a number of second quality blooms. The pure white strain of White Enchantress comes a good second. Snowstorm is worthy of attention on account of its delicious perfume, and a two-year plant gives excellent blooms. For a private grower Mrs. Lloyd Wieg is eminently desirable on account of its large size and delicious perfume. I would place the selection of your correspondent, viz., Wivesfield White, behind all these. I have found it soft, and it produces too many second quality blooms. As to mauves, I believe that the best all-round variety is Cécile. This makes a good plant, is free, and very large. It is very reliable in mid-winter. Another *Market Grower*.

EUCALYPTUS GUNNII (see p. 119).—In answer to Mr. Barnard's query concerning the heights of the species in Britain, full details are given by Elwes and Henry, *Trees of Great Britain and Ireland*, Vol. VI., pages 1640-1642. The largest may be tabulated as follows:—Borde Hill, Sussex, 56 feet in 1909; Miss Breton's Garden, Sandhurst, 48 feet in 1911; Putley Court, Ledbury, 48 feet in 1910; Penrose, Helston (Cornwall), 45 feet in 1910; Kinloch Horn and Inverave, Scotland, 30 to 40 feet in 1912. The largest number of trees occur at Brightlingsea Hall, Essex, where this species succeeds in exposed sites in light, sandy soil. J. Henry.

—To Mr. Barnard's enquiry (p. 119), I may reply that about five years ago I saw at Stonefield (Captain Campbell's beautiful place on Loch Fyne) four or five trees of Eucalyptus which I took to be E. Gunnii. I measured the girth of one of them—5 feet at 4½ feet from the

ground. I had no instrument for taking the height of this tree, which I was informed was then over 80 feet; and it looked like it. Herbert Maxwell, Monroith.

HARDINESS OF PRIMULA MALACOIDES (see p. 119).—This Primula has for long been recognised as fairly hardy in this country. I have seen it planted out on rockeries, but it is at its best in pots inside. I was rather surprised at the advice of your correspondent, R. F. G., not to grow it in larger than 4-inch pots. This treatment may account for his getting only from six to twelve spikes of flower on each plant. We get that number of flowers from 2½-inch pots; the best plants obtained from 5½ and 6-inch pots, on which we have often from 50 to 60 flower-spikes. I find this Primula never damps off if a good sprinkling of sharp sand is placed on the surface soil at potting time. When used for decoration, the white form, combined with Sutton's Double Scarlet P. sinensis, is very effective. These two varieties are also very decorative when staged together in a greenhouse or conservatory. I. Johnson, Cotton House Gardens, Norwich.

—I was much interested in the remarks made by R. F. G., *Inverness*, on the hardiness of Primula malacoides. Last year I had several self-sown seedlings growing under a wall facing S.W., which flowered out of doors. I quite agree that it needs to be grown in very cool conditions, although I do not agree with growing it in so small a pot. I have a good batch in full flower at the time of writing, growing in 48 size pots, with six to twelve spikes of flowers. I might mention that a friend of mine near here has a splendid batch growing in 6-inch pots, the seed of which was sown last August. W. R. H., Manor House, Waltham St. Lawrence.

BEGONIA MRS. J. A. PETERSON (see pp. 105, 117). The parentage of this dainty hybrid is of special interest, especially if B. socotrana, which is placed first, is the seed-bearing parent, as this species has persistently refused to produce seedlings differing materially from itself. The other parent, B. Gloire de Sceaux, is itself of doubtful origin, the parentage recorded by the raiser not being generally accepted; at least one high authority is of opinion that its progenitors were B. incarnata purpurea × B. socotrana. In any case, the South African species B. Dregei had no part in it. Yet in the variety Mrs. J. A. Peterson, the characters of B. Dregei which gave to B. Gloire de Lorraine its free-blooming and graceful habit—are unmistakably in evidence. As a cross between B. Gloire de Lorraine or one of its sports and B. Gloire de Sceaux this would be accounted for, but for B. Gloire de Sceaux and B. socotrana to produce such an offspring is, to say the least, remarkable, and appears to render more uncertain the origin of B. Gloire de Sceaux. Whatever the source may be, Mr. Peterson, of Cincinnati, is to be congratulated on having raised an excellent Begonia, which promises to become as popular as B. Gloire de Lorraine. C. H. M.

GARDENERS AND EXPERIMENTS. It would be a boon to many gardeners if a machine could be placed on the market for clipping Yew hedges to work similarly to the ordinary horse clipper with the wheel. The machine would be practically the same, only the clipping arrangement would require wider blades. I think that for Yew and Boxwood hedges that are regularly clipped this would prove useful. D. D. R.

NOMENCLATURE OF APPLES (see pp. 106 and 120).—Mr. Bunyard's suggestion of an experimental station, where all known varieties would be grown for comparison, is a good one; but I fear we must wait for better times before it can become an actual fact. Even then we should not ensure an Apple being called by its correct name. For instance, it would be impossible to make the London dealers call Wellington Apple by its proper name of Damelow's Seedling, or to impose the new spelling which Mr. Pearson suggests. This applies equally to the growers in the Midlands, who now call it Normanton, or Normanton Wonder. The majority of these people never read a gardening paper, and care little about priority in naming so long as they get the Apple they want. Nurserymen are the worst offenders in respect to re-naming.

After a batch of trees is once distributed by them, it takes a long time to alter the naming. An instance which came to my knowledge some years ago may here be recorded. An amateur grower in a village called Barnowby, near here, raised from seed an Apple which proved to be a useful variety, and he generously gave away grafts of it to others. A good-sized tree of the variety was established in one of the orchards here in 1894; it had always been known as Dewdney's Seedling. As the Apple proved to be a good bearer, and an excellent cooker, I decided to send it to the R.H.S. Fruit Committee for a Certificate, in order to bring it into notice. Enquiries elicited the fact that the original raiser was dead, but his daughter was still living. I have her letter now, in which she asked me to name the Apple after her father, Dewdney's Seedling, when I exhibited it. I did so, and specimens were sent to the Fruit Committee about twenty years ago, but failed to get an award. I have also exhibited it several times in collections in later years under that name. A few years afterwards the same Apple was distributed to the public under the name of Baron Wolsley. I make no complaint, but merely record this part of the history of the variety, and the name of the raiser. It is another instance of the multiplication of names. It will always be known here as "Dewdney's Seedling," and rightly so, for the raiser should have the privilege of naming in the first instance, and the name given by him ought not to be altered without his consent. W. H. DIVERS, V.M.H., Belvoir Castle Gardens, Grimsby.

VINCA.—Bertoloni has attributed the name *Vinca acutiflora* to two different species, namely, to *Vinca minor* and to *Vinca difformis*. The latter is the correct name of the plant, a native of Portugal, so rightly praised in your issue of February 12 (p. 87). G. H. W., *Place Bourlon*.

DEEP CULTIVATION.—Ridging does not appear as one of the trial methods in Mr. Drew's interesting articles (*Gard. Chron.*, January 1, 3 and 15, 1916). I have somehow developed a fondness for it in my garden in such patches as can remain empty during the winter. It is rapidly effected, and therefore cheap; it allows a good chance of air penetration, and if we got lasting frost (which we do not) penetration thereby would be enhanced. My soil is of a heavy type; the mechanical analysis was given *sub* "Campanula Allionii," *Gard. Chron.*, 1915, p. 210, and certainly the tilth has improved considerably during the last few years; though, of course, this may not be due to the ridging. It would also be unsafe to ascribe the improvement which has occurred in Potato crop to this as a sole cause. In 1913 the grand average per plant was 3.3 lb. (including a row over the site of an old Celery trench with 5.3, which raised the average), whilst in 1915 the crop averaged 5.3 lb. In the former year the maximum per plant was 5.3, the minimum 1.5; in the later year 6.7 and 4.0 respectively. The method adopted is to throw up a full spit on either side, troughs two spade breadths wide (14 inches) and ridges rather wider (19 inches) resulting; in this soil these ridges stand very fairly well. The trough is dug and turned for a full spit of depth; thus somewhat less than half the ground is cultivated to a depth of two spits. In rainy weather water stands in the troughs for a considerable time. Measurement on ground thus treated shows a distance from ridge centre to ridge centre of 37 inches, whilst measuring along the surface to the same points gives about 51 inches, or a linear increase of about 38 per cent. The further treatment consists in levelling off, spreading manure and surface-digging it in. This season a further development is being tried on some patches. Although Russell and Pickering (abstract in Annual Report, Rothamsted, Expt. Sta., 1913) found in their soil that deep digging without inclusion of manure in the deep layers was of little avail, my trials of subsoil cultivation with explosives (*Jl.*, R.H.S., 1914, p. 7 and *ibid.*, 1915, p. 124) showed that in my soil marked effects were obtained by disturbance without deep addition of manure. Since therefore continuity of subsoiling or inclusion of deeply-placed manure does not seem to be necessary,

the troughs between the ridges are now being stirred in their third spit. About 3 or 4 feet length of soil from a trough is barrowed to the end of a trough, odd in number, to expose the third spit, which is then turned a spit deep on itself, the second spit of the next length put on to it, and that so on, to and fro, the second spit being supplied from the next trough when the end of a row is reached. Though the space is perhaps rather cramped the work progresses fairly speedily with the spade wielded by a lad of 15. If the weather should prevent the completion of a patch, at any rate the ground will have had the disturbance and aeration due to the ridging. The length of the third spit exposed should, of course, be an aliquot part of the whole length of the row. Is prolonged air exposure good? If it is, this combined trenching and ridging should help to ensure a more thorough aeration than either double digging or trenching, in both of which procedures, especially the latter, the air exposure of the deeper layers is soon checked by its reburial. If in the following year the ridging is done at right angles to the previous ridging, the major part of the ground will have been cultivated three spits deep every two years, with or without deep manuring, as may seem indicated. H. E. DURHAM.

SOCIETIES.

ROYAL HORTICULTURAL. Scientific Committee.

FEBRUARY 22.—*Present*: Mr. E. A. Bowles, M.A., F.L.S., F.G.S. (in the chair), Sir John Llewellyn, Bart., Sir Everard im Thurn, Col. H. E. Rawson, Dr. F. Keeble, Messrs. Ledger, Allard, Worsdell, Hales, Odell, Holmes, Pearson, Fraser, and Chittenden (hon. sec.).

Cuscuta amara form.—MR. FRASER showed a specimen from Weybridge of the form of *C. amara* called *lilacina* or *erubescens*. In the type only the stamens are coloured; in the variety the petals also are tipped with reddish colour.

Plants from Gallipoli.—MR. E. M. HOLMES showed a number of dried plants, including species of *Mentha*, *Thymus*, *Marrubium*, etc., which Lieut. G. M. Owen had sent to Mr. Chittenden from Gallipoli. One thistle was a particularly handsome plant.

Effect of screening on plants.—COL. H. E. RAWSON showed a further series of examples of *Tropaeolum* showing deviations from the normal such as suppression of bracts, congestion of flowers, hairiness and the like, which he attributed to the effect of screening. Members remarked that similar occurrences were to be seen in *Tropaeolum* grown in pots when kept on the dry side, and the general criticism of the results obtained was that while these aberrations may be the direct result of the treatment the plants had been subjected to, the possibility of an inclination to vary in these directions, irrespective of external conditions such as lighting, being innate in the strain experimented with, had not been excluded.

Kitchingia uniflora.—MR. W. E. LEDGER showed a well-flowered plant of this rare Crassulacean species from (in all probability) Madagascar. It differed in appearance in several minute characters from the figure in the *Bot. Mag.* (t. 8236), which had been drawn from the Kew plant, of which the present was a piece, owing, probably, to flowering at a different season, to differences in temperature and light, etc. It has roundish, fleshy leaves about $\frac{1}{2}$ inch in diameter, and unecolate pink flowers, $\frac{1}{2}$ – $\frac{3}{4}$ inch long, borne on slender pedicels. A Botanical Certificate was unanimously recommended to this plant.

Rhododendron irroratum.—A Botanical Certificate was also recommended to *Rhododendron irroratum*, a new Chinese species with white flowers, freely spotted inside the corolla with purplish-pink spots, sent by Mr. E. J. P. Magor, of Lamellan, St. Tudy, Cornwall.

Jasminum primulinum.—MR. W. B. FLETCHER sent specimens of single and double flowers of this species, with the following history:—*Jasminum primulinum* rarely fruits; indeed, Wilson, who collected it in China for Messrs. Veitch,

searched in vain for seeds, and was obliged to send plants over to England in order to introduce it. The form introduced had hose-in-hose flowers, and Mr. Fletcher had pollinated the flowers with pollen from *J. nudiflorum* and its own pollen, with the result that a few seeds were secured, and these gave one single-flowered plant, one of the original form, two double-flowered (triplex) forms, and one with such poor flowers that it was promptly destroyed. Mr. Fletcher also crossed *J. nudiflorum* ♀ with *J. primulinum* ♂ and secured one plant which, after flowering once or twice, died. He drew attention to the fact that in seedlings of *J. primulinum* the first leaves formed above the cotyledons are trifoliate, while in *J. nudiflorum* they are simple. The hybrid, with *nudiflorum* as its seed-parent, had its first leaves trifoliate.

Hyacinth many-spiked.—Examples of *Hyacinth* bulbs throwing several instead of one spike of flowers are frequently before the Committee, fourteen spikes being the most observed so far. They are derived from the same stock as the single-spiked bulbs, and are picked out at the time the bulbs are lifted by the growers, and sold as miniature *Hyacinths*. They represent a stage at which the bulb is beginning to produce a number of small ones.

HORTICULTURAL CLUB.

ANNUAL MEETING.

FEBRUARY 22.—The annual general meeting of members of the Horticultural Club took place in the club room, Hotel Windsor, Westminster, the president, Sir Frank Crisp, Bart., presiding. The report of the committee for 1915, which was read by the hon. sec., Mr. R. Hooper Pearson, showed that in spite of the war and of the fact that many of the members were on active military service, several meetings had taken place at which interesting lectures on travel and other subjects were delivered.

In April last, when the Royal Horticultural Society established the War Horticultural Relief Fund, it was agreed that the club should contribute a sum of £50. The report went on to say that the list of members had been sadly thinned during the year by the hand of death. Lieut. Robert Woodward, of the 3rd Battalion South Wales Borderers, one of the many members of the club who had already fought in the present war, was killed in action in May last. Mr. Alfred H. Rivers had been associated with the club for many years, and was a member of the committee until his death. Others whose loss was sincerely regretted were Mr. F. W. Harvey, late editor of the *Garden*, Mr. H. Whateley, an ardent Orchid cultivator, and Mr. Leopold J. Salomons, whose generous gift to the nation of Box Hill, Surrey, would be remembered with gratitude. The financial position of the club was described by the Hon. Treasurer, Sir Harry Veitch. Upwards of £200 had been received in subscriptions during the year, and the balance of cash in hand was £178 15s. 11d., besides an amount of £450 11s. 9d. invested in Consolidated Stock. On the proposition of the president, the report was unanimously adopted. The meeting then proceeded to the reappointment of the committee and officers. All the members of the committee were reappointed, and Mr. J. F. McLeod, Wickford Hall, Essex, was elected in the place of Mr. A. H. Rivers, deceased.

Before the proceedings terminated the president very kindly invited the members to visit Friar Park in June next, the date to be determined later.

DEBATING SOCIETIES.

DUMFRIES AND GALLOWAY GARDENERS'.—This association met in the Wesley Hall, Dumfries, on February 19. Provost S. Arnett presided over a good attendance. A paper was read by Mr. James Henderson, gardener to James Wylie, Esq., Elmbank, Dumfries, his subject being "A Talk About Vines." Mr. Henderson is well known in the district as an able grower of Grapes, and his paper was characterised by practical information, conveyed in an interesting manner. He dealt with such questions as outside versus inside borders, syringing, aerial roots, training, and a number of other points of importance and interest. Messrs. Hutchinson, Taylor, Pritchard and others took part in the discussion, which dealt mainly with the questions of syringing and shanking.

MARKETS.

COVENT GARDEN, March 1.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—EDS.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Azalea, white, per doz. bun.	3 0-3 6	— Odontoglossum crispum, per doz. bunches,	4 0-5 0
Camellias, white, per doz.	2 0 —	— Pelargonium, per doz. bunches,	4 0-6 0
Carnations, per doz. blooms, best American varieties	1 6-2 6	— Primroses, per doz. bun.	2 0 —
— smaller, per doz. bunches	— —	— Richardias (Arums), per doz.	5 0-6 0
— Carola (crimson), extra large	3 0-3 6	Roses: per dozen blooms—	— —
— Malmaison, per dozen blooms	— —	— Duchess of Wellington	— —
— oink	10 0-15 0	— Lady Hillingdon	2 6-4 0
Daffodils, per doz. bunches	— —	— Liberty	4 0-6 0
— Double Van Zion	2 6-3 0	— Madame A. Chatenay	— —
— Emperor	2 6-3 0	— Melody	— —
— Empress	3 0-3 6	— Mrs. Russell	— —
— Golden Spur	1 6-2 0	— My Maryland	— —
— Princess	2 0-2 6	— Niphetos	3 0-3 6
— Sir Watkin	2 0-2 6	— Prince de Bulgarie	— —
— Victoria	3 6-4 0	— Richmond	4 0-6 0
Eucharis, per doz.	2 0-2 6	— Sunburst	4 0-6 0
Freesia, white, per doz. bun.	1 0-1 6	— White Crawford	— —
Gardenias, per box of 15 and 18 blooms	5 0-6 0	Spiraea, white, per doz. bun.	— —
Lapageria, per doz. blooms	— —	Stock, double white, per doz. bunches	— —
Lilac, white, per doz. sprays	4 0-5 0	Tuberose, per packet, 24 blooms	— —
Lilium longiflorum, per doz. long	5 0 —	Tulip, Darwin's mauve, per doz. blooms	1 6-1 9
— short	4 0-4 6	Tulips, single, white, per doz. bunches	5 0-7 0
— lanceifolium album, long	— —	— coloured, per doz. bun.	6 0-10 0
— short	2 0-2 6	— double, orange, per doz. bun.	10 0-12 0
— lanceifolium rubrum, per doz. long	1 6-2 0	— red, per doz. bun.	10 0-12 0
— short	1 6 —	— pink, per doz. bun.	9 0-12 0
Lily-of-the-Valley, per dozen bunches:	— —	Violets, per doz. bunches	1 6-2 0
— extra special	24 0 —	— double, Marie Louise, per doz. bun.	4 0-6 0
— special	15 0-18 0	— Princess of Wales	3 0-4 6
— ordinary	— —	White Heather, per doz. bun.	1 0 —
Narcissus, Ornatus, per doz. bunches	2 6-3 0		
Orchids, per doz.:	— —		
— Cattleya	12 0-15 0		
Orchids, Cypripedium	2 0-3 6		

French and Guernsey Flowers.

	s.d.s.d.		s.d.s.d.
Anemone, double pink, per doz. bun.	1 0-1 6	— paper white, per pad	6 0-8 0
— de Caen, mix., per doz. bun.	2 6-3 0	— Soleil d'Or (Guernsey), per doz. bun.	1 3-1 6
— mauve, per doz. bun.	2 0-2 6	Ranunculus, red, per doz. bun.	8 0-9 0
Marguerites, yellow, per doz. bunches	1 6-2 0	— Barbazon, per doz. bun.	3 0-4 0
Mimosas (Acacia), per pad	5 0-6 0	Stock, white, per pad	5 0-6 0
Narcissus, Grand Primo, per doz. bun.	1 6-2 6	Violets, Parma, large bun.	2 0-2 6
— Ornatus	1 9-2 0	— single, per pad, 48-60's.	5 0-6 0
		— per doz. bun.	1 6-1 9

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches	7 0-8 0	Carnation foliage, doz. bunches	4 0-5 0
Agrostis (Fairy Grass), per doz. bunches	2 0-4 0	Croton foliage, doz. bunches	12 0-15 0
Asparagus plumosus, long trails, per half dozen	1 6-2 0	Cycas leaves, per doz.	5 0-12 0
— medium, doz. bunches	12 0-18 0	Eulalia japonica, per bunch	— —
— Sprenger, doz. bunches	8 0-12 0	Fern, French, per doz. bunches	0 6-0 8
Berberis, per doz. bun.	4 0-5 0	— common	4 0-5 0
		Galax leaves, green, per doz. bunches	— —

Cut Foliage, &c.: Average Wholesale Prices—Cont.

	s.d.s.d.		s.d.s.d.
Hardy foliage, various, per doz. bun.	4 0-8 0	Myrtle, doz. bun.	— —
Honesty, per doz. bunches	10 0-12 0	— English, small-leaved	6 0 —
Lichen Moss, per doz. boxes	15 0-18 0	— French, per doz. bunches	1 0-1 3
Moss, gross bunches	7 0-8 0	Smilax, per bun. of 6 trails	1 3-1 6

REMARKS.—The very bad weather experienced recently has lessened the supplies of cut flowers. English Violets appear to have experienced the worse check; they are practically unobtainable. Lilium longiflorum is still scarce, and Richardias (Arums) have gone back to Christmas prices. Carnations show a tendency to become finer, and Red Roses are more plentiful, and the blooms are exceptionally good, but there is only a limited supply of the varieties Sunburst and Lady Love, though the special blooms on long stems are the finest offered this season. Other subjects show little alteration. There are abundant supplies of Daffodils, Tulips, and Narcissus ornatus. Darwin Tulips are getting more plentiful. In addition to the mauve varieties, those of other colours are now obtainable. Blooms of the deep Red variety are very fine. The supplies from Guernsey and Seilly are not heavy, but prices for these flowers remain low. French flowers continue to arrive daily, but they include scarcely any White Narcissus, which is practically finished for the season. Other sorts arrive in excellent condition, including Anemones (double and single), White Stock Star, Freesia, and White Hyacinth. Anemone and White Stock are the most in demand.

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Aralia Sieboldii, dozen	4 0-6 0	Ferns, choicer sorts, per doz.	8 0-12 0
Araucaria, ex. celsa, per doz.	18 0-21 0	Ficus repens, 48's, per doz.	4 6-5 0
Asparagus plumosus nanus, per doz.	10 0-12 0	— 60's, per doz.	3 0-3 6
— Sprenger, per doz.	6 0-8 0	Genistas, 48's, per doz.	12 0 —
Aspidistra, per doz. green	21 0-30 0	Geonoma gracilis, 60's, per doz.	6 0-8 0
— variegated, per doz.	30 0-60 0	— larger, each	2 6-7 6
Azaleas, each	2 6-3 6	Grevillea, 48's, per doz.	— —
Begonia, Gloire de Lorraine, 48's, per doz.	10 0-12 0	Hyacinths, white and coloured, 48's, per doz.	10 0-12 0
Cacti, various, per tray of 15's	4 0 —	Kentia Belmoreana, per doz.	4 0-8 0
— tray of 12's	5 0 —	— Forsteriana, 60's, per doz.	4 0-8 0
Cinerarias, 48's, per doz.	9 0-10 0	— larger, per doz.	18 0-36 0
Cocos Weddelliana, 48's, per doz.	18 0-30 0	Latania borbonica, per doz.	12 0-30 0
— 60's, per doz.	8 0-12 0	Lilium longiflorum, per doz.	24 0-30 0
Croton, per doz.	18 0-30 0	Marguerites, in 48's, per doz.	7 0-8 0
Cyclamen, per doz.	10 0-12 0	— white	— —
Daffodils, 48's, per doz.	8 0-10 0	Pandanus Veitchii, per doz.	36 0-48 0
Dracaena, green, per doz.	— —	Phoenix rupicola, each	12 6-21 0
Erica, white, 48's, per doz.	8 0-10 0	Solanum, 48's, per doz.	8 0-10 0
Ferns, in thumbs, per 100, in small and large 60's	12 0-20 0	Spiraea, white, per doz.	10 0-12 0
— in 48's, per doz.	5 0-6 0	— pink, per doz.	— —
— in 32's, per doz.	10 0-18 0	Tulips, scarlet, on bulbs, per doz.	1 3-1 6
		— white, on bulbs, per doz.	1 6 —

Fruit: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Apples—		Grape Fruit, per case	17 0 —
— Albemarle, per barrel	42 0-45 0	Grapes: English, black, per lb.	2 6-4 6
— Californian, per box	12 0-13 0	— Almeria, per bbl. of 60 lbs.	21 0-25 0
— English cooking, per bus.	7 0-10 0	Lemons, per case	9 0-16 0
— Nova Scotia, per barrel	18 0-32 0	Lyches, per box	1 4-1 6
— Oregon, per box	14 6-16 0	Melons, Cape	2 0-2 6
— Wenatchee, per case	10 0 —	Nectarines, Cape, per box	5 0-8 0
Bananas, bunch—		Nuts, Brazils, new, per cwt.	56 0-60 0
— Medium	7 6-10 0	— Coconuts, per 100	22 0 —
— X-medium	9 0-12 0	Oranges, per case	10 0-40
— Extra	16 6-14 0	— Californian Seedless, per case	24 0-25 0
— Double X	12 0-16 0	— Palermo Bitters, per case	14 0-17 0
— Giant	15 0-16 0	— Seville	— —
— Red, per ton	£20 0 —	Peaches, Cape	6 0-10 0
— Jamaica, per ton	£16 0 —	Pears, per case	22 0-25 0
Chestnuts—		— Cape	4 0-5 0
— Italian, per bag	22 0 —	Plums, Cape	4 0-8 0
— Spanish, per bag	16 0 —	Strawberries, forced, per lb.	8 0-24 0
Cobnuts, per lb.	0 6 —	Walnuts, Naples, per cwt.	70 0 —
Cranberries, per case	11 0-12 0		
Dates, per doz. boxes	4 3-4 6		

Vegetables: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Artichokes, Globe, per doz.	4 0-6 0	Aubergines, per doz.	— —
— Jerusalem, per cwt.	3 0 —	Beetroot, per bag	4 6 —
Asparagus, Paris green	4 6-5 0	Beans, Broad, per pad	8 0-8 0
		— Madeira	— —

BATH GARDENERS'.—The feature of the fortnightly meeting of the Bath and District Gardeners' Debating Society, held on the 14th ult. at the Foresters' Hall, was a lantern lecture by Mr. E. F. Machen, entitled "Bacteria in Harness." Mr. T. Parrott presided. Mr. Machen said that the subject of his lecture was one of national importance, since it concerned the problem of increased food production in Great Britain. Last year 15 millions were spent on foreign vegetables, and at least two-thirds of the quantity could have been grown in Great Britain. The Board of Agriculture had been issuing circulars advising the public to grow more foodstuffs. The great difficulty was to obtain suitable manure. At present stable manure cost 10s. per ton in London, compared with 3s. per ton three years ago. The continual decrease in the horse traffic in the streets presented a serious problem to the gardener, because chemical manures would not give the same results. The incorporation of humus or of any organic matter in the soil enabled the bacteria to set to work and to release from the soil the potash and phosphates which would otherwise remain insoluble. Other important factors in cultivation were lime, which gave further assistance to the bacteria, and nitrogen. The latter was a stimulant which should be given sparingly. The following was the prize list:—Class I.: A. W. Tugwell, Esq. (gardener, T. Parrott), cut flowers, six points; Mrs. Hatch (gardener, T. Allen), pot Cyclamen and five Onions, four points; A. E. Meyer, Esq. (gardener, C. Adam), 12 bowls of Hyacinths, six points. Class II.: Mrs. Erskine (gardener, H. Roper), eight pots of Primula obconica, six points; Mr. F. W. Brown, six pots of Lachenalias, five points.

WARGRAVE AND DISTRICT GARDENERS'.—At the meeting held on February 23 Mr. T. Batchelor, Bolney Court Gardens, Shiplake, gave a very interesting and practical paper on "Carnation Culture." He dealt with the general cultivation of this flower, described the methods followed by himself, the various pests and diseases to which the Carnation is subject, and the remedies. The paper concluded with a list of the best varieties of Carnations in cultivation. A discussion followed.

READING AND DISTRICT GARDENERS' MUTUAL IMPROVEMENT.—A practical paper on "The Cultivation of Vines" was given at the usual fortnightly meeting of the above Association, held in the Abbey Hall, on Monday, by Mr. A. G. Nichols, late of Strathfieldsaye Gardens. He dealt with the subject under its various aspects, giving practical directions for cultivation and general treatment. The president (Mr. E. P. Fournet Sutton) thanked the lecturer for his valuable paper. The quality of the exhibits in the "Points" Competition was high, the results being as follows:—Mr. A. H. Fulker, The Gardens, Ebbw Vale, 12 points (maximum) for Primulas; Mr. C. Cripps, The Gardens, Sidmouth Grange, 12 points for Hyacinths; Mr. E. Blackwell, The Gardens, Foxhill, 9 points for Hyacinths; Mr. A. W. Eggleton, The Gardens, Ashton Lodge, 6½ points for Hyacinths.

BRISTOL AND DISTRICT GARDENERS'.—The usual fortnightly meeting of this Association was held on the 24th ult., Mr. H. Woodward presiding. The lecturer was Mr. B. T. Barker, M.A., who took for his subject "Fungi and Their Work in Nature." Mr. Barker's remarks were both interesting and instructive, and were followed with keen interest. At the close of the discussion which followed he was accorded a vote of thanks. The prizes offered by Messrs. Elkes and Harford for two pots of bulbs were won by Mr. Scott and Mr. Spry. In the points competition Mr. Clark was awarded 5 for a Cypripedium, and Mr. Raston 4 for two pots of bulbs.

GARDENING APPOINTMENTS.

Mr. V. Shepherd, Bank Dale, Bromborough, as Gardener to Mrs. BUDGORN, Penbedw Hall, Nannerch, Mold.
Mr. S. R. Day, as Gardener to HUBERT MARTINEAU, Esq., The Lodge, Holyport, Maidenhead.
Mr. G. Francis, for the past six years Gardener to W. E. CLAYE, Esq., Bramcote Hill, Nottingham, as Gardener to the same gentleman at Lenton House, Lenton, Nottingham.
Mr. Chas. E. Lafferty, for the past ten years gardener to G. TETHER, Esq., Broxbolme, Newington, Hull, as Gardener to SIR WALTER SMYTHIE, Bart., Acton Burnel Park, near Shrewsbury.
Mr. E. Wicks, for the last twenty-three years at the Grange, Old Windsor, Berks, as Gardener to E. M. PINLEY, Esq., Woolbourn House, Woolbourn, Bucks.
Mr. J. Carpenter, recently Gardener at Bigginwood House, Upper Norwood, S.E., as Gardener to Mr. C. J. and Lady ANNE MURRAY, The Grange, Old Windsor, Berks.
Mr. W. Foulkes, for the past 4½ years Gardener to Major Sir H. H. RAHMAN, Bt., M.P., at Allestree Hall, near Derby, as Gardener to the same gentleman at Hockley Manor, near Folkestone, Kent.
Mr. H. Dix, for the past 4½ years Gardener at Betley Hall, as Gardener to W. MORTON PHILIPS, Esq., Heybridge, Tean, Stoke-on-Trent.

SCHEDULES RECEIVED.

Perpetual-flowering Carnation Society Show, in the Royal Horticultural Hall, Vincent Square, Westminster, London, on Wednesday, March 29, 1916.
Southampton Royal Horticultural Society Grand Summer Show, at South Stoneham House, Swaythling, on Wednesday, July 12, 1916.

Vegetables: Average Wholesale Prices—continued.

	s.d.	s.d.		s.d.	s.d.
Brussels Sprouts, per 4 bus. ..	4 6 —		Onions, English, per cwt. ..	21 0-22 0	
Cabbage, per tally ..	3 0-6 0		— spring, per doz. bun. ..	4 6 —	
Carrots, per doz. ..	2 0-3 0		— Valencia, per case ..	20 0-22 0	
Cauliflowers, per tally ..	8 0-14 0		Parsnips, per bag ..	3 0 —	
Celeriac, per doz. ..	6 0 —		Peas, per pad (France) ..	5 0-8 0	
Celery, per fan ..	1 0-1 6		Potatoes—		
Chicory, per lb. ..	—		— Channel Is-		
Cucumbers, per doz. ..	6 0-12 0		lands, per lb. ..	0 4-0 5	
French Beans, Dwf. (France) per packet ..	1 6 —		Radishes, per doz. bun. ..	3 6-4 0	
— Beans (Guernsey), per lb. ..	3 0-4 0		Rhubarb, Forced, per doz. ..	0 10-1 0	
Garlic, per lb. ..	0 10-1 0		— natural, per doz. ..	2 6 —	
Greens, per bag. ..	3 0 5 0		Savoys, per tally ..	8 0-10 0	
Herbs, per doz. bun. ..	2 0-6 0		Seakale, per doz. punnets ..	18 0-20 0	
Horseradish, per bundle ..	3 0-4 0		Shallots, per 4 sieve ..	3 0-3 6	
Leeks, per doz. ..	2 0-3 0		Spinach, per bus. Tomatoes ..	9 0 —	
Lettuce, Cabbage and Cos, per doz. ..	1 0-6 0		— Teneriffe, per bundle ..	10 0-16 0	
Mushrooms, cultivated per lb. ..	1 0-1 4		Turnips, per cwt. ..	3 0 —	
— Buttons ..	1 6-1 9		Turnip Tops, per bag ..	3 0 —	
Mustard and Cress, per doz. punnets ..	1 0 1 6		Watercress, per doz. ..	0 6 —	

REMARKS.—The supplies of Apples, both home and colonial, have been very short during the past week. A shipment is, however, due from Nova Scotia. The principal Pears now on offer are those from the Cape, comprising Louise Bonne de Jersey, Williams' Bon Chrétien, and Clapp's Favorite. Other Cape fruits available are Peaches, Nectarines, Plums, Melons, and Grapes. Some good forced Strawberries are to be obtained. The supplies of Black Grapes are about equal to the demand, the principal variety being Gros Colmar. Forced vegetables, including Peas, Beans, Seakale, Asparagus, and Mushrooms, are available. Onions continue high in price, but other outdoor vegetables are fairly plentiful. E. H. R., Covent Garden Market, March 1, 1916.

Potatoes.

	s.d.	s.d.		s.d.	s.d.
Bedford—			Lincoln—		
King Edward ..	4 9-5 3		Eclipse ..	4 6-4 8	
Blackland ..	4 0-4 3		Evergood ..	4 0-4 6	
Dunbar ..	6 3-6 9		King Edward ..	4 9-5 6	
Kent—			Queen ..	4 6-5 3	
Eclipse ..	4 6-5 0		Scotch—		
King Edward ..	5 0-5 3		King Edward ..	4 9-5 3	
Queen ..	4 9-5 3				

REMARKS.—The Potato trade is slightly better; arrivals are not quite so heavy, and consequently prices are a little firmer for the time being. The stock in London is also not so heavy as it has been of late. Edward J. Venhorn, Covent Garden and St. Pancras, March 1, 1916.

THE WEATHER.

WEATHER IN WEST HERTS

Week ending March 1.

The ground covered with snow nine inches deep. This was the first unseasonably cold week for nine weeks. All the days were more or less below the average in temperature and also, with one exception, the nights. On the two coldest days the temperature in the thermometer-screen did not rise above 33° and on the coldest night the exposed thermometer registered 9° at frost. The ground is at the present time 1° colder than is seasonable both at one and two feet deep. Snow fell on five days, and snow with rain on one day and rain only on the last day. The total measurement of the melted snow and rain amounted to as much as 14 inches. The ground was covered with snow for seven days, and on the 26th ult. the snow was nine inches deep. With one exception (1900) this was the deepest fall of snow I have recorded here in February during the 30 years over which my records at Berkhamsted extend. During the week 7½ gallons of melted snow and rain came through the bare soil percolation-gauge and 5½ gallons through that on which short grass is growing. The sun shone on an average for 1 hour 1 minute a day, which is 1 hour 21 minutes a day short of the mean daily duration for February. Light airs and calms alone prevailed during the week. The mean amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by seven per cent.

CATALOGUES RECEIVED.

Seeds

J. R. PEARSON AND SONS, Lowdham, near Nottingham.
WM. THOMPSON AND CO., LTD., London, W.C.
AMOS PERRY, Enfield.
GEO. COULING AND SONS, Cuper.
WILLIAM WAT, Edgely, Cuper.
THOMAS S. WARE, LTD., Feltham.
BARR & SONS, 11-13, King Street, Covent Garden, London.
E. P. DIXON & SONS, LTD., Hull.
THE "PRIMER" SEED CO., LTD., 117, London Road, Brighton.
T. CLARKE, 2, Abbeygate Street, Bury St. Edmunds.
FROBERG & SONS, Reading.
M. H. STUBBS, Union Street, Aberdeen.

Obituary.

W. WELLS.—We regret to record the death of Mr. W. Wells, head of the firm of W. Wells and Co., Chrysanthemum Nurseries, Mersham, Surrey, which occurred on the 28th ult. at Mersham. Mr. Wells was the author of *The Culture of the Chrysanthemum*, and for many years carried on business at Earlswood, near Redhill, where he first made his name as a successful Chrysanthemum raiser and grower. This was more than a quarter of a century ago, and since that time deceased has introduced to commerce a large number of excellent novelties, including many raised in Australia by Mr. Pockett. The funeral took place at Earlswood on Friday, March 4.

THOMAS CLARK.—We regret to learn, from the American journal *Horticulture*, of the death of Thomas Clark, a gardener and estate manager in California. Mr. Clark was a native of Scotland, but emigrated to America in early youth. He died on January 25, at Pacific Grove, California.

DONALD MATHESON.—From the *Florists' Exchange*, of America, comes the news of the death of Donald Matheson, landscape gardener on the Phelps Estate at Teaneck, Englewood, N.J. Mr. Matheson began his gardening career in the gardens of Sir Kenneth Mackenzie at Conan House, Ross-shire. In 1870 he emigrated to America, and took over the management of the Phelps Estate, which he retained until his death, at the age of seventy-two.

ANSWERS TO CORRESPONDENTS.

There are few gardeners, and still fewer amateurs, who do not on occasion require immediate information upon various points of practice. But either from an unwillingness to inquire, or from not knowing of whom to make the inquiry, they too often fail to obtain the information they are in want of. And let no one be alarmed lest his questions should appear trifling, or those of a person ignorant of that which he ought to know. He is the wisest man who is conscious of his ignorance; for how little do the wisest really know!—except that they know little. If one man is unacquainted with a fact, however common, it is probable that hundreds of others in the same position as himself are equally in want of similar information. To ask a question, then, is to consult the good of others as well as of one's self.—*Gardeners' Chronicle*, No. 1, Vol. I., January 2, 1841.

ANEMONES FOR GARDENS: *Dorset Gardeners*. The tuberous Anemones you mention are all perennial, but they do not live, or at any rate thrive, in certain soils if left in the ground during the whole year. The usual practice is to lift the tubers in June, and plant them again in October.

CALATHEA LEAVES DECAYING: *M. L.* The Calathea appears to have suffered from water condensing on the leaves at a time when the temperature of the house was unusually low; the excessive moisture has caused decay to set up. The leaves were too shrivelled on arrival here for us to say what variety of Calathea the specimens represented.

DRYING ADIANTUM (MAIDENHAIR) FRONDS: *W. T.* Nearly all Ferns are very easy to dry, and keep their colours for a long time if dried quickly when full grown. Adiantum Ferns seem to retain their colours as well as any. We have before us some that were dried thirty to forty years ago, and are still quite green, kept in the dark between the leaves of a book. These were dried between sheets of paper under pressure. Several methods of drying them may be adopted. The simplest is to get a flat piece of board, lay two double sheets of paper on it, then a frond of the Fern to be dried, laying it out flat, in its natural form. Put two double sheets of dry paper, or blotting paper, on the top, then another frond, and so on. After every half-dozen fronds or so place a flat board, or a proper drying board, made with narrow laths, placed crosswise, and forming fine, open lattice work. Place a weight or something heavy on the top, and change the damp papers once every twenty-four hours for a week, after which less frequent changing will be required for another

week, when the fronds will be quite dry. Keep the drying apparatus at work in a dry, airy room. A second method is to dry them by the above plan and then dip the fronds in a weak solution of gum arabic. A third plan is to steep the fronds in a solution of 5 per cent. of formalin, and then dry them by the above process. If you wish to dry them in their natural form, without pressure, procure a box and some fine, clean sand. Dry the sand and spread some of it over the bottom of the box. Then lay some Fern fronds all over the bottom, loosely, and in their natural position, without pressure. Next run in some sand, between and amongst the Fern fronds, till completely embedded and covered. More fronds and sand may be introduced until the box is full. Then set the box on the top of a stove, a greenhouse boiler, or a kitchen range, where a gentle heat will quickly dry the fronds in their natural form.

GRAPE IN A COOL HOUSE: *A. B. C.* You cannot grow Muscat of Alexandria or Lady Downe's to perfection without fire-heat. Madresfield Court has been so grown, but it requires expert management owing to its liability to burst during the second swelling. If you have the vines named already established, and it is not convenient partly to remake the border and plant suitable varieties, the Black Hamburgs should be allowed to extend. This can be done by encouraging new growths from the base, or bringing the old rods down, training them parallel with the wall plate, and encouraging new rods to grow up at right angles from them, about 4 feet apart. The growths on the other varieties should be removed as the new shoots from the Hamburgs become older, always keeping a clear foot or 18 inches in advance. Royal Muscadine is a white sweetwater variety of good quality, but small in berry, which will do well in an unheated house and ripen a little earlier than Black Hamburg. You will find instructions for the routine work of vineries in our weekly calendar during the growing season.

NAMES OF FRUIT: *Ashby*. No. 1, Maltster; 2, Minchull Crab; 5, Reimette du Caux; 4, Cornish Mother.

NECTARINES SHRIVELLING: *E. C.* To judge from the particulars given in your letter, we assume that the trouble is due to the effect of direct sunshine on the skins of the fruits just before they ripened. Where the fruits are freely exposed to the sun, it frequently happens that a little moisture standing on the skins is sufficient to scald, and eventually cause the fruit to rot. Lord Napier and other early varieties are liable to be affected in this manner. Next season you could put the matter to the test by endeavouring to keep the fruits dry at the time when the trouble usually overtakes them; and if the sun is very hot, slight shading during the hottest part of the day might be advisable.

SWEET PEA PEDIGREES: *H. B.* An article by Mr. W. Cuthbertson, V.M.H., on p. 12 of the *Sweet Pea Annual* for this year, deals with the question. The largest list of pedigrees ever enumerated was embraced in a series of drawings exhibited by Mr. Cuthbertson at the International Horticultural Exhibition, 1912. Some twenty parentages were illustrated. The *Sweet Pea Annual* may be obtained from our publishing department, price 2s. 3d., free by post.

Communications Received.—R. I. F.—W. E.—E. H. P.A.—J. R. J.—De B. C.—A. C. B.—H. van O.—J. R. P.—G. S.—F. J. Lady Gardener—W. L. C.—T. S.—E. B.—H. W. W. Co.—L. P. B.—P. J. M.—W. B. H.—R. P. A. J. L.—C. E. W.—E. L.—T. W. B.—W. N. C.—W. T.—A. B. J.—C. M. B.

* * NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopenny, and thereafter at the rate of ½d. every two ounces.

THE

Gardeners' Chronicle

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MR. REGINALD FARRER'S
EXPLORATIONS IN CHINA.*

XXXII.—FINALE.

ON the 13th of September, 1915, we said farewell to Wolvesden. Winter snow was on the heights, and in the brilliant frosty sunshine *Gentiana ornata* was twinkling in the crystallised lawns about the inn, as we rode sadly away down the long windings of the valley where no flowers lingered any more. A last night among the friendly monks of the Halls of Heaven, and we were off across the great downs that separate the bed of the Da-Tung from that of the Ping-fan River. It is a high, wild land: for four days one crosses big moorland passes, on two of which, just at the crest, *Gentiana ornata* lay in such unbroken sheets of sky that one could not set one's foot down without crushing a group of its trumpets. Only in the gullies and on the cooler slopes is there scrub or coppice, never anything that one could call a forest: the landscape gives a huge perspective of high, bare, grassy downs: very far away now in the distance rises the long gleaming line of the great Alps of Wolvesden. So at last down the long loëss slopes bedecked with *Aster hispidus*, we descended into the broad valley of Ping-fan, accompanied the river for a while, and then struck away for three days towards Lanchow, in country now more and more Egyptian in its torrid and naked desolation of sand and loëss and bare red rocks like Sinai, till

even the green bare downs of a few days since seemed fresh and alpine to remember.

Southward from Lanchow you get the typical country of S. Kansu, a land of huge loëss undulations, perfectly treeless (except for small knots of Poplar about villages and shrines), and highly cultivated. At Tsinchan the Weeping Willows become a feature of rare beauty, and as you move down towards the border of the province, you cross that vegetation-belt, which last year we only touched at its farthest western extremity, between Siku and Minchow, where it infringes on the flora of Thibet. The country is much less cultivated, runs higher, and is picturesque with coppice and bush vegetation. *Crataegus crenulata* is here at the very centre of its distribution, and glows scarlet all along the wayside, far down into Szechuan. *Rosa Banksiae* and my fragrant beauty of last year rival each other in decking the hedgerows; the cooler sides of the hill-valleys and gullies are dense with *Iris tectorum*, and on all the shadier cliffs lie tussocks of *Ophiopogon*. Of *Rosa Hugonis* I could see no trace (the golden Rose of last year is clearly *R. Hugonis*, not *R. xanthina*), and I was puzzled by another low-growing species, whose solitary fruits have so thick and fleshy a rind that they look like small amber-coloured Pomegranates, beset with brown bristles; and make a remarkable effect. At this point, too, begins a *Gentian* which seems to extend far down into Central China, and is very pretty, its long straying stems being set with long-trumpeted upstanding stars of rosy-mauve, the interlobar fold being cut into a delicate lacework of fringe. In all the open grassy banks this soon grew abundant, accompanying us down through Szechuan, till we took boat on the river.

After the charming and charmingly situated little town of Whitewaters, we enter the Da-Ba-S'an, and say farewell to Kansu. The Da-Ba-S'an, however, proves little more than an intensified version of the country we have been traversing. It consists of a series of parallel ranges, running to about 8,000 feet. But the level of the road is so high that 8,000 feet are not enough to give grandeur or an alpine flora: day after day we enter a fresh line of mountains, ascend a pass, and drop again into the river valley that intercepts us from the next: the summits are gentle sugar-loaves, clothed to their very crown in small copse, except where the tireless peasants have scraped little terraces for Maize, even along the shallow ledges of the most unpropitious precipices. Yet, except in the sombre and splendid gorges that the cobbled pathway threads, there is no magnificence of line: and above, no Alpine forest, and no Alpine lawns. In fact, the level is too low: in Hupeh, along the ranges of the Yangtse, 8,000 feet apparently yield *Rhododendron* in numbers, and at least two *Primulas*: here, with Thibet still so comparatively close at hand, an elevation of at least 10,000 is needed before Alpines or alpine conditions may be encountered. We found only one *Primula* in the gorges

of the Da-Ba-S'an; but this, though old in fame, is so new in record here that it is almost more exciting than were it a species unknown. For it is plainly no other than *P. sinensis*: and one of the most remarkable peculiarities of that puzzling plant has so far been its apparently rigid restriction to the limestone range above Ichang (Mr. F. K. Ward, indeed, quotes it from his Yunnanese wanderings, though casually: so remote a record inspires distrust in a *Primula*, until confirmed). Now many weary hundreds of miles intervene between Ichang and the conjuncture of Kansu, Shensi and Szechuan: and the appearance here of *P. sinensis* is hardly less startling than if *P. Allionii* were to be reported from Holyhead. Tangled as the mountain systems are, of N. Hupeh and Szechuan, the Da-Ba-S'an essentially forms one belt, away to the Ichang region: and I should not be at all surprised to hear of *P. sinensis* occurring at intervals in congenial spots, all along its length. Those spots, indeed, remarkably recall those of *P. Allionii* in the rocks of Tenda: for it is just so, in just such tight, hard crevices of similar sheer limestone walls, and undercuts and grottoes, that you will see the lush and aromatic green tufts of *P. sinensis* arising from their soft and fragile root. Clearly, it will never show a Spartan constitution, but there is no reason why *P. sinensis*, from so much further north, and further inland, should not prove more resistant, if wisely treated, to our climate than the tender old type from the Ichang district. For the benefit of those earnest seekers after details, who quarrel with a series of current notes because they abstain from the full precision of the forthcoming history, I will only add that this plant may be seen between Tai-an-i and Ming Jang Jô: and of much profit may the information be!

At Chowtien we rejoin the Ja-Ling-Jang, which has for many days been coyly winding through the ranges, at the bottom of deep and gloomy canons. A few miles further, and we debouch finally from the Da-Ba-S'an, and emerge into the famous Red Basin of Szechuan at Kwang Yuen. Utterly changed now is the character of the country, and it changes further from day to day. The cold and bracing north is left behind: we are in a lush and dripping climate, where the rounded rocks themselves sweat moisture, and the air is soft and snowless as Olympos. From Kwang Yuen to Bas-ning, the way lies along the summit of a series of winding downs. The landscape strangely recalls the foothills of Provence or Liguria: the red soil gives the same effect, the slopes are as closely terraced for the rice as for the vine, and a scattered little vivid *Cypripedium* exactly repeats the rôle of *Pinus halepensis* (or is it *P. Pinaster*?). It is a smooth and smiling scene: but it wrings the heart with homesickness indescribable, for the gaunt and glorious austerities of Thibet, which it seems almost impossible to realise, are still hardly more than twenty days to the westward, across this fat, warm land of undistinguished ups and downs. At

* The previous articles by Mr. Farrer were published in our issues for September 12 and 26, October 17 and 21, November 14 and 28, 1914, January 2, February 27, March 20, April 10 and 24, May 1, 15 and 29, June 12 and 19, July 3 and 10, November 13, 20 and 27, December 11 and 25, 1915, and January 8, 15, 22 and 29, February 5, 12 and 19, and March 4, 1916.

'Bas-ning we again rejoin the Ja-Ling-Jang, and now take boat. More and more rapidly the vegetation changes as we float southwards. Alenrites gives way to Orange bit by bit; daily the Bamboos increase in number and size and fastuous magnificence, till at last we glide down to Chungking between hills of Palm and Orange. Chungking is the very heart of Szechuan, wrapped in such eternal gloom that they say the dogs bark there when the sun shines. Here it is that my record fitly closes, for here we join the Yangtz', and make the rest of our journey down the Gorges in various steamers appropriate to the varying channels of that tremendous river. And the rest is only sorrow, and a heavy, increasing ache of heart, to have left so far behind those lovely, lonely lands, to have finished and done with these two years of work, to have turned back on the beauty of the hills and face once more towards the squalid comforts and tediums and nuisances that make up the clutter we call "civilisation." The load would be yet heavier if I could not nurse a hope of returning some day to the heart of Asia, if only there still remain any zealots for flowers in England, and if I had not called together such a goodly little troop of compatriots from Thibet, whose gay faces, I hope, may long be my reminders, in many an English garden, of our original meeting-places, from which I brought them by the hand across the continents. And so, to them, and all their would-be hosts, I bid a short good-bye, while I sit here for a month or two compiling the full chronicle of their achievement. *Reginald Farrer.*

FRENCH NOTES.

A FRENCH SCHOOL OF BASKET-MAKING.

THE problem of employment for partially disabled soldiers is occupying the attention of the French Government, and among other larger methods under consideration it is suggested that a certain number of discharged soldiers might be trained in basket-making and in its necessary accompaniment, the cultivation of the osier. There exists already in the Haute Marne the Fayl-Billot School for the purpose of such instruction, and this school has already rendered valuable aid in the resuscitation of this rural industry. There are taught the cultivation of the osier as well as the elements of gardening and farming, and also the practice of basket-making. The pupil who passes through the course receives the title of master basket-maker (*Maitre Vannier*).

The idea that a thorough training in such a craft is necessary may raise a smile among those—and, alas, they are numerous among our rulers—who have yet to learn that scientific instruction is the essential basis of successful manufacture; and that smile would surely be broadened if it were added that at this French school not only is instruction given, but also research undertaken. Yet from the researches conducted in the Fayl-Billot School it has been discovered that from the roots of the creeping Willow, *Salix repens argentea*—common on the sands on the Channel coast—may be obtained an extraordinary tough fibre, which serves admirably to replace the rattan now imported from India, China, and Japan.

Furthermore, it has been shown that by grafting at soil level the osier, *Salix viminalis*, on the White Poplar (*Populus alba*), the osier may be grown in soils which are too wet to allow of its successful cultivation by ordinary means. No fewer than 20,000 acres are devoted to osier cultivation in France, and thus a use is found for soil which is unsuitable for ordinary cultivation. The chief osier beds are in the Ardennes, occupying 5,000 acres, and there are others also in Tonnaine. *M.*

KEW NOTES.

RHODODENDRON RACEMOSUM.

THE value of this beautiful Chinese Rhododendron for the rock garden and pleasure-grounds is well known. Naturally flowering outside during April and early May, Rhododendron racemosum can be readily induced to flower two or three months earlier in a heated greenhouse. On bush plants, 1 to 2 feet high, the white flowers are borne in great profusion, these being rendered additionally attractive by the small evergreen leaves. Outside, most of the plants have pink-tinted blossoms, but under glass the flowers, when fully open, are white. *R. racemosum* produces seeds very freely, and is one of the easiest species to propagate by this means.

COTONEASTER ANGUSTIFOLIA.

I was pleased to note Mr. H. W. Ward's comments on *Pyracantha* (*Cotoneaster*) *angustifolia* on p. 100. It is one of the most attractive

of all the evergreen berry-bearing shrubs at the present time. While in early winter the fruits were yellow in colour, they are now (mid-February) bright orange. I cannot, however, agree that "It will thrive in almost any soil or situation," for it is the least hardy of the three species of *Pyracantha*. Five or six years ago specimens were killed to the ground by frost in the open at Kew. The shelter of a south or west wall is desirable, if the best results are hoped for. "*C. Franchetii frigida*" is an obvious error, as both names are those of good species. *C. Franchetii* is an evergreen bush, 8 to 10 feet high, with orange-scarlet fruits, and *C. frigida* a deciduous shrub or small tree, 20 feet in height, with dark red fruits. *A. O.*

ORCHID NOTES AND CLEANINGS.

HYBRID ORCHIDS.

(Continued from January 29, 1916, p. 60.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Cattleya Oberon	B.-C. Digbyano-Mossiae × C. Schroderae	Sander and Sons.
Brasso-Cattleya Bianca	B.-C. The Baron × C. Mendelii	P. Smith, Esq.
Brasso-Cattleya Penelope	B.-C. Madame Chas. Maron × C. Fabia	Stuart Low and Co.
Brasso-Laelio-Cattleya Bilda	B.-L. Digbyano-purpurata × C. labiata	Flory and Black.
Brasso-Laelio-Cattleya Probus	B.-L. Digbyano-purpurata × C. Portia	Stuart Low and Co.
Brasso-Laelio-Cattleya Simone	B.-C. Digbyano-Trianae × L.-C. Hippolyta Phoebe	Flory and Black.
Cattleya Anita	Portia × Dowiana aurea	J. and A. McBean.
Cattleya Jasper	Venus × Octave Doln	Stuart Low and Co.
Cattleya Mendabia	Mendelii × Fabia	Stuart Low and Co.
Cattleya Thalia	Percivaliana × Maggie Raphael	W. H. St. Quintin, Esq.
Cattleya Valeria	Portia × Rhoda	J. and A. McBean.
Cymbidium Diana	Pauwelsii × elmerneo-Lowianum	Hassall and Co.
Cymbidium Miranda	Alexanderi × Lowie-grandiflorum	Sir Geo. L. Holford.
Cymbidium Vera	Lowgrinum × Lowianum concolor	Hamilton Smith, Esq.
Cypripedium Alliance	Alcides × Lecanum	T. Worsley, Esq.
Cypripedium Ardens	glaucochryllum × Miss Louisa Fowler	Armstrong and Brown.
Cypripedium Binkley	Hera × Sultan	Sir Geo. L. Holford.
Cypripedium Claret	Fairrieana × Memoria Moensii	Armstrong and Brown.
Cypripedium Eva	aureum Hyceanum × Memoria Jerninghamiae	Stuart Low and Co.
Cypripedium Formidabile	Mastersianum × Alcibiades	Sander and Sons.
Cypripedium Gladiator	Aeson × Idina	Flory and Black.
Cypripedium Heratrix	Hera × Gratrixianum	F. J. Hanbury, Esq.
Cypripedium Iryl	Beryl × insigne Thompsonianum	Sander and Sons.
Cypripedium Ivoire	bellatulum × Lecanum	W. H. St. Quintin, Esq.
Cypripedium Lillie Mayall	Hera Euryades × Minos	Stuart Low and Co.
Cypripedium Milly	Arthurianum × Victor Hugo	Flory and Black.
Cypripedium Molra	Priam × bingleyense	Hassall and Co.
Cypripedium perfectum	Leander × San-Actaeus	Major Robertson.
Cypripedium Pixie	Alabaster × Alcibiades	Sir Geo. L. Holford.
Cypripedium Purity	Mandiac × niveum	Major Robertson.
Cypripedium Thora	Fairrieana × Earl of Tankerville	H. J. Bromfiel, Esq.
Cypripedium Tigris	Mrs. Wm. Mostyn × Earl of Tankerville	Charlesworth and Co.
Cypripedium Tom Worsley	Alcibiades × Memoria Jerninghamiae	T. Worsley, Esq.
Dendrobium Arabis	Cassiope × Cybele album	W. H. St. Quintin, Esq.
Laelio-Cattleya Basil	C. Martini × L.-C. callistoglossa	Charlesworth and Co.
Laelio-Cattleya Buenos Aires	L.-C. blancheyensis × C. Enid	Dr. Lacroze.
Laelio-Cattleya Elsa	L.-C. highburiensis × C. Dowiana	Stuart Low and Co.
Laelio-Cattleya Ezerum	L.-C. Mrs. Temple × C. Trianae	Armstrong and Brown.
Laelio-Cattleya Gatten Yellow	L.-O. huminosa × Ophir	Sir Jeremiah Colman, Bart.
Laelio-Cattleya Jessamine	L.-C. Orlens × C. Chocoensis alba	J. and A. McBean.
Laelio-Cattleya Monica	L.-C. Myra × callistoglossa	J. and A. McBean.
Laelio-Cattleya Viking	L.-C. callistoglossa × C. Percivaliana	Stuart Low and Co.
Odontioda Amethyst	Oda. Bradshawiae × Odm. Hallio-crispum	Armstrong and Brown.
Odontioda Dora	Oda. Vuystekeae × Odm. Jasper	Charlesworth and Co.
Odontioda Evelyn	Oda. Vuystekeae × C. Noeliana	Pantia Ralli, Esq.
Odontioda Mrs. N. Worsley	Oda. Bradshawiae × Odm. Kegelmani (polyxanthum)	H. Worsley, Esq.
Odontioda Sunset	Oda. Vuystekeae × Odm. harvengtense	P. Smith, Esq.
Odontioda Verdun	Oda. Charlesworthii × Odm. Armstrongiae	Armstrong and Brown.
Odontoglossum Anzac	eximium × Colossus	Armstrong and Brown.
Odontoglossum Caroline	Pescatorei × harvengtense	J. and A. McBean.
Odontoglossum Martins	amabile × Jasper	Armstrong and Brown.
Odontoglossum Mary Gratix	Rossii × eximium	Sander and Sons.
Odontoglossum Tigris	Thompsonianum × eximium	Armstrong and Brown.
Odontoglossum Verdun	Lawrenceanum × Wilkeanum	Sander and Sons.
Sophro-Cattleya Enid	S. grandiflora × C. Enid	J. and A. McBean.
Sophro-Cattleya Poppaen	S. grandiflora × C. Empress Frederick	R. G. Thwaites, Esq.
Sophro-Laelio-Cattleya rubens	S. L.-C. Eros × S. grandiflora	Elizabeth Lady Lawrence.
Cypripedium Aricia	insigne × G. F. Moore	
Cypripedium auratum	aureum virginale × Persephone	
Cypripedium Belides	villosum × Troilus	
Cypripedium Bendis	Mons. de Corte × G. F. Moore	
Cypripedium Camilla	Persephone × San-Arthur	
Cypripedium Darcis	Troilus × Robsonii	
Cypripedium Dracomostyn	Draco × Mrs. Wm. Mostyn	
Cypripedium Feronia	Beryl var. W. Hopkins × Beeckmannii	
Cypripedium hirsuto-Curtmannii	hirsutissimum × Curtmannii	
Cypripedium Leanoloniae	Lecanum Chinkaberryanum × Leoniae	
Cypripedium Lotos	nifens × Troilus	
Cypripedium Matthewsianum	Thalia × Hera Euryades	
Cypripedium Mercurius	Robsoni × Actaeus	
Cypripedium Nysa	Thalia × nifens	
Cypripedium Panthus	Robsonii × Lecanum	
Cypripedium Pero	nifens-Lecanum × Baron Schröder	
Cypripedium Silviana	Hitchinsiae × Mrs. W. Mostyn	
Cypripedium umbrinum	Charlesianum × exal hybrid	
Cypripedium Vulcan	Lathamianum × Clio	
Cypripedium Zelia	Godseffianum × Hera	

These Cypripediums have been raised in the collection of F. J. Hanbury, Esq., Brockhurst, East Grinstead (gr. Mr. T. Matthews).

NOTE.—Cypripedium Wm. Rees (Manchester, January 6) = *Euphrates* (Hitchinsiae × Milo).
Cypripedium Thora—name previously used for C. Northumbriae.

* *Gard. Chron.*, Dec. 7, 1912, p. 434. Shown also by the Duke of Marlborough as C. Beatrice, a name used previously for the cross Boxallii × Lovii. Recently again named in error C. Dora.

† Shown as C. Lillie Mayall by Mr. Rogerson. See *Gard. Chron.*, Feb. 13, 1909, p. 110. Recently named in error C. Martina.

THE DOUBLE COCONUT OR COCO DE MER.

MUCH has been written on this singular Palm, and its history has been fully recorded, but in my investigations of the flora of Seychelles I have collected evidence on two or three points which were somewhat obscure. Generally, in this country, the botanical name of *Lodoicea sechellarum* is current, and it is the one adopted by the majority of botanists of all countries; but for various reasons other specific names have been published, and sometimes without the corresponding synonyms, giving rise to the supposition that there is more than one species of Double Coconut. Other names coupled with the generic name *Lodoicea* are: *L. callipyge*, *L. maldavica*, and *L. Sonneratii*. The first was given by Commerson in his manuscript account of the Palm, but it was not adopted by Labillardière, who published the earliest botanical description under the generic designation of *Lodoicea*. The name *callipyge* has been revived by some writers, and it is used, without any synonym, in an account of germination in a Dutch horticultural publication of 1911.

With regard to the natural distribution of the Double Coconut in the Seychelles, there have been differences of opinion, some writers recording it as confined to Praslin (where Commerson discovered it) in a truly wild condition. J. Harrison, who supplied the material and information for the *Botanical Magazine* (plates 2,734-2,738), 1827, adds the neighbouring Curieuse and Round Islands.

Writing in 1868, Dr. Perceval Wright states that "the island of Curieuse was the head-quarters of *Lodoicea*. In 1829 this island was selected for a leper establishment, and a Mr. George Forbes was appointed overseer. He was specially instructed not to permit the leaves of the Coco de Mer to be cut nor the nuts to be eaten. Further, he was to plant once a month all mature nuts found on the ground. These instructions were carefully followed out for forty years."

On the other hand, Dr. J. Stanley Gardiner was of opinion that the Double Coconut "was only indigenous to Praslin, and supposed to have been transported to Curieuse by human agency." In reply to my inquiries, Mr. P. R. Dupont, Curator of the Botanic Station, Mahé, writes: "I personally think that the Coco de Mer is indigenous to Curieuse and to Round Island, where there are traces of very old trees on inaccessible parts. For instance, the famous 'bowl' can be seen in the ground on the hills of Round Island and Curieuse, and on the latter island, besides trees which have been planted near the paupers' camp, there is a great number of very old trees on the summits, where they had certainly not been planted. The soil on the summits of Curieuse is denuded, and the Coco de Mer trees remain stunted, while in Praslin they reach lofty dimensions only in damp valleys. There is no reason why this Palm should not have existed in the whole of the Praslin group, which is of granitic formation."

It is well known that the Double Coconut is usually two-lobed, sometimes three-lobed, and very rarely six-lobed, the last being a complete and perfect development of the three-celled ovary. Male and female flowers are borne on separate individuals, but some confusion has been caused by the popular use of these terms, two-lobed fruits being known as female and three-lobed fruits as males. Commonly, all the nuts of a tree are either two or three-lobed; occasionally they occur intermixed.

The Double Coconut Palm, besides bearing the largest seed-vessel known, presents some other physiological peculiarities. Professor Stanley Gardiner collected such information as he could on the spot, according to which germination takes about three years. Male trees bear their first flowers when about 45 years old, the female

trees their first when about 65 years old, and the nut takes seven to nine years to ripen. There is little doubt, however, that these functions and phases are influenced by local conditions, though always of relatively long duration. Particulars of the germination of this Palm (see fig. 52) will be found in the *Gardeners' Chronicle* for 1888, ii., p. 732. W. Botting Hemsley.

the "seedling" had not yet been weaned, but still remained attached to the parent fruit by means of its elongated cotyledon. Although at first sight very remarkable, the seedling (see fig. 52) follows the pattern of many monocotyledons. The embryo, at first very small, develops a tubular leaf-stalk, the apex of which, remaining within the seed, becomes sucker-like, and

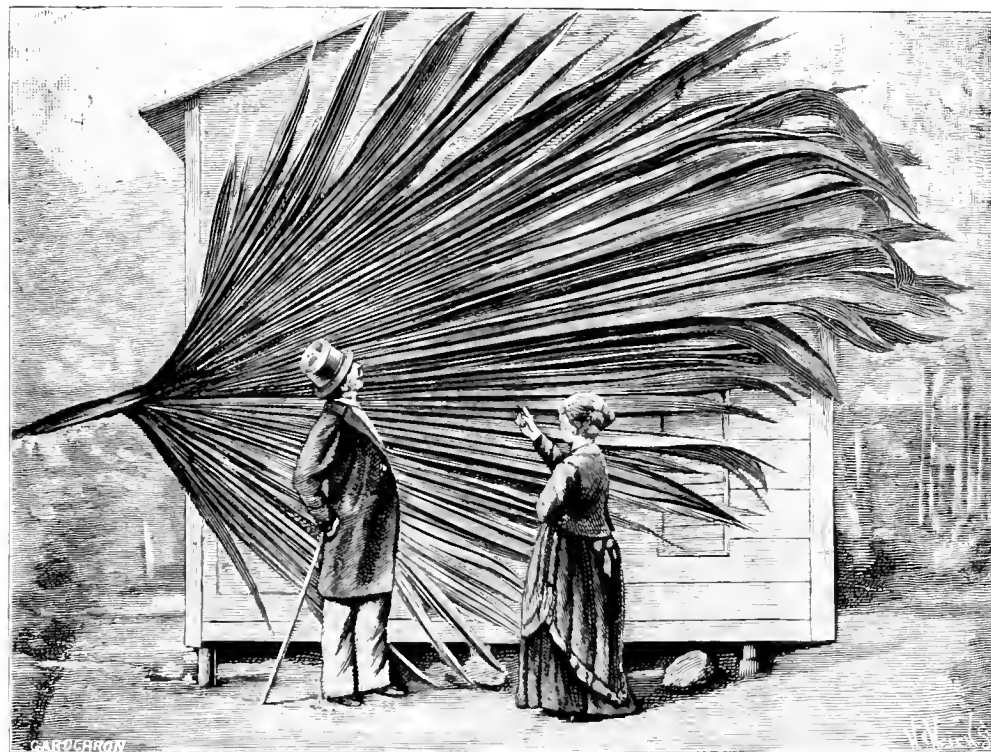


FIG. 51.—LEAF OF THE DOUBLE COCONUT.

[Few, if any, plants have aroused so much curiosity as the Double Coconut. From the fact that the fruits are frequently found floating on the Indian Ocean, it was alleged that the tree which produced them is a submarine vegetable. General Gordon (see *Gard. Chron.*, Vol. IV., 3rd series, 1888, p. 732) put forward in all seriousness the belief that the fruit of *Lodoicea sechellarum* is the "Forbidden Fruit," the instrument of "man's first disobedience," and maintained in conformity with this hypothesis that the

erves to absorb and transfer nutriment from the stored-up food of the seed to the young stem and root. The cotyledonary leaf stalk elongates to form a long tube, which bears at its tree end the rudiments of the root and stem. After the tube has passed out of the fruit the stem rudiment forms a leaf, which pushes out from a split in the base of the cotyledonary leaf into the open air, just as does the first leaf of a wheat grain. This is followed by a second leaf, and so on, and during this time adventitious roots, developing at the base of the stem, fix the plant in the soil. Eds.]

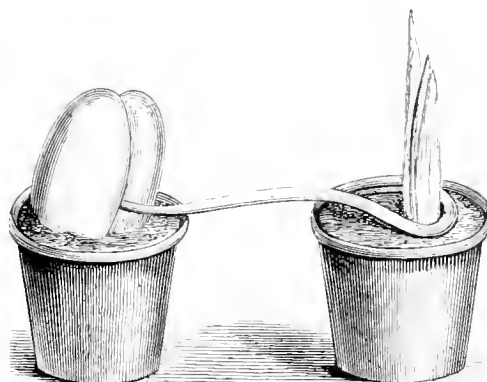


FIG. 52.—GERMINATION OF THE DOUBLE COCONUT.

Garden of Eden was situated in the Seychelles Islands. Those interested in the plant rather than in the legends and superstitions which it has called forth, may see at Kew a specimen still—or until recently—in the course of its leisurely germination. This specimen when three years old was figured in the *Gard. Chron.* (XIII., Jan. 21., 1893, p. 74), and although the first leaves had attained to a considerable size,

FLORISTS' FLOWERS.

CARNATION "YELLOWS."

The disease of Carnations known as "yellows" is well known to Carnation growers in America, and is probably common in this country. In its earliest recognisable stage the disease manifests itself by small pale-green areas on the leaves. At first very minute and only seen readily when a leaf is held up against the light, these spots increase in size and ultimately become from $\frac{1}{2}$ to $\frac{1}{4}$ inch in diameter. They may remain distinct or run together, forming elongated patches parallel to the midrib of the leaf. Mr. G. L. Peltier, of the Horticultural Department, University of Illinois, who has been engaged for several years on a study of this disease (see *Gardening*, Chicago, February 1, 1916), has been unable to find evidence that it is due either to parasitic bacteria or fungi. Nor is it due to the puncture of the leaf by insects. In severe attacks the spots spread to the branches and flower-stalks. Cuttings from diseased plants strike only with difficulty, and the flowers produced by plants suffering from "yellows" are of inferior quality. Mr. Peltier makes the extremely interesting

observation that in diseased plants of coloured-flowered varieties the old spots in the leaves assume a colour the depth of which varies with the colour of the flower, in light pink or scarlet varieties the old spots are slightly coloured, and in dark-red varieties deeply coloured.

The disease shows a fairly well-defined seasonal variation. It is well marked in cuttings after potting up, becomes less conspicuous for a time, and more pronounced again (in America) during July and August. It increases during the winter months and is at its height in spring.

By rigorous selection of cuttings from healthy plants the disease may be in some measure controlled. The difficulty in the way of complete

FRUIT REGISTER.

GRAPE COOPER'S BLACK.

It would be interesting to know the origin of this Grape (see fig. 53), about which there are some doubts. Dr. Hogg considered it to be the same as Gros Maroc. I do not care to cast any doubt on his judgment, but having seen Cooper's Black many times under various conditions I find it extremely difficult to believe that it is identical with Gros Maroc. Not only does Cooper's Black produce longer bunches, with rounder berries, but the latter carry a distinct bloom. Again, I consider that Cooper's Black keeps longer in the

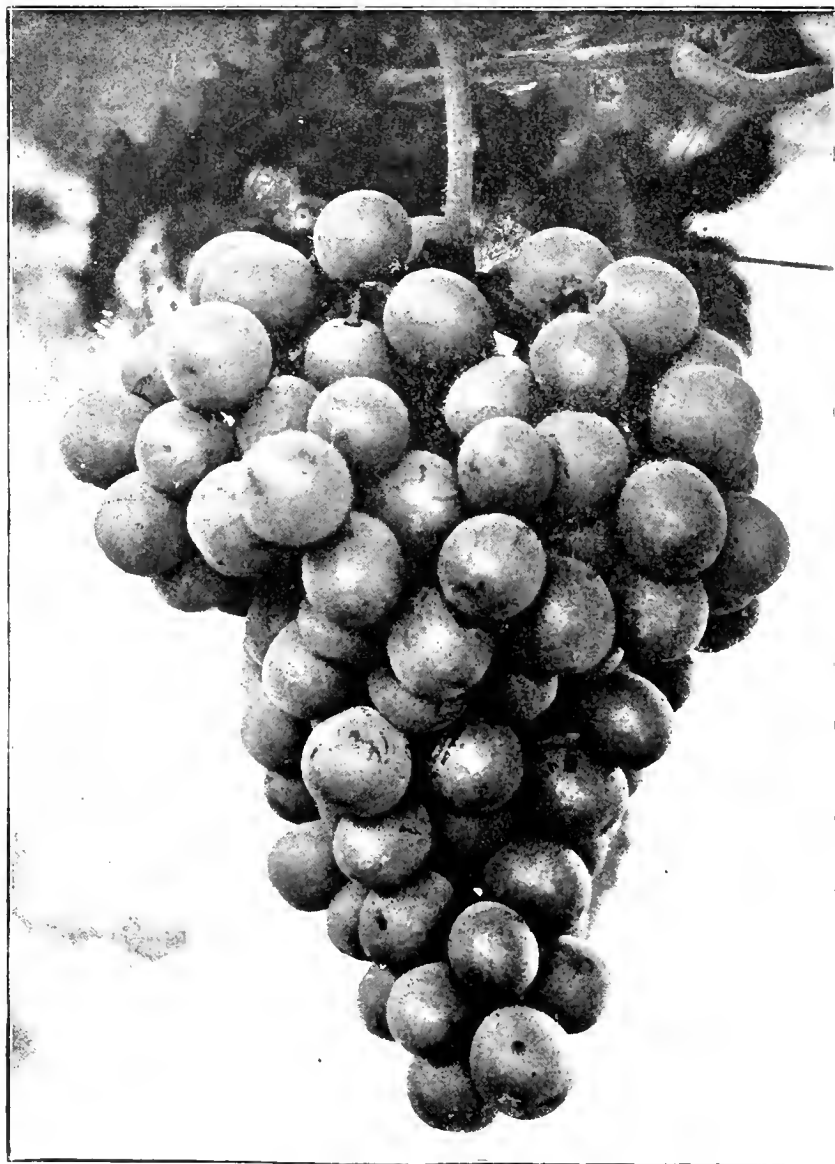


FIG. 53.—GRAPE COOPER'S BLACK, BELIEVED TO BE IDENTICAL WITH GROS MAROC.

success by this method lies in the fact that a plant may be affected by the disease and yet not exhibit the symptoms. Seedlings are said to be free from the disease, but after propagation for two years cuttings from such seedlings may exhibit it. Whether this is due to the disease being "catching," and to the plant taking it whilst on the potting bench, or whether the increased vigour of the seedlings enables them for a time to overmaster the malady latent in them, has not yet been determined.

Mr. Peltier has demonstrated, however, that the disease may be communicated to healthy plants. Thus by grafting healthy shoots on badly affected plants he has shown that the yellowing is communicated to the scions.

best condition than will Gros Maroc in a general way. The berries, too, are more compactly placed on the bunch than are those of Gros Maroc. Typical bunches are not at all like Black Alicante in shape, berry, or even colour, and the vines are certainly not alike in habit of growth. Kempsey Alicante is simply a name gained by the variety Morocco, because of the excellence of the bunches grown at Kempsey House, Worcester, in the same way that other varieties have been given new names purely owing to feats of high-class cultivation. I saw the bunches referred to by O. T. (see p. 57) at Aldenham House Gardens in December last, and admired them for their handsome appearance. E. M.

The Week's Work.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

WEATHER CONDITIONS.—Though distinct signs of activity in fruit trees and bushes were noticeable in this locality a fortnight ago, very few were so far advanced as to be in bloom, so that it is probable that the present severe weather, by retarding growth, will prove beneficial, so far as fruit trees are concerned. Snowstorms have stopped all outside work in the fruit garden.

PROTECTION OF FRUIT TREES FROM HARES AND RABBITS. A constant watch should be kept over young fruit trees planted in exposed outside gardens or orchards, and not entirely protected by walls or rabbit-proof netting. During severe weather rabbits and hares become very daring, and, finding a difficulty in getting other food, will surmount many obstacles to get at the bark of young trees. If left unprotected for a few days, they will bark the trees to such an extent as to check or even completely ruin them. If wire-fencing is relied on, it must be a good height from the ground, and secured by strong pegs between the uprights, and should be examined at intervals and broken places repaired. Where once the trees have been attacked, and the rabbits have acquired a liking for them (as an extra precaution), each stem should be smeared with one of the protective mixtures now advertised. This will render the bark distasteful to these destructive little animals.

TOP-DRESSING ESTABLISHED PEACH TREES.—Old-established trees that have cropped regularly should be top-dressed before they show signs of exhaustion. Remove a goodly portion of the old soil, forking it away carefully to prevent damaging the roots. Suckers springing from the roots should be traced to their origin and cut clean away, while the roots are uncovered. The compost for the top-dressing should consist mainly of sweet, turfy loam, mixed with a liberal quantity of lime or mortar rubble and charcoal, and enriched with a concentrated manure, used in accordance with the maker's directions. Mix the materials thoroughly and use the compost in a moderately dry condition. Work in a little of the finer soil amongst the smaller roots, and keep the latter near to the surface. Tread or ram the whole firmly, as a loose rooting medium for Peach or other fruit trees is not suitable. If the weather is dry when the operation is carried out, water the soil copiously to settle it about the roots, and finally apply a mulch of some light material, such as manure from an old Mushroom-bed. At this season of the year it is not wise to apply a heavy dressing of animal manure to Peach borders, especially where the soil is cold and heavy, as it would exclude the sun's rays and thus tend to keep the border unnecessarily cold.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

PLEIONE HOOKERIANA AND P. HUMILIS.—These Pleiones flower later than the majority, and repotting was therefore postponed until the present time. Full directions for the operation were given in a previous calendar. Those already potted may now receive more water than hitherto, and should be placed in the intermediate division, where ample ventilation can be provided whenever the weather is favourable.

SPATHOGLOTTIS.—Most of these terrestrial Orchids require warm house cultivation, and a similar compost to that advised for Thunias. The repotting should be done just before the plants begin to grow. The principal species and hybrids are *S. aurea*, *S. Fortunei*, *S. Kimballiana*, *S. kewensis*, *S. Lobbi*, *S. Vieillardii*, *S. plicata*, and *S. aureo-Vieillardii*. Fairly deep pans are the best receptacles. They must

be well drained, and a number of corms placed in each pan. Even when not in flower, *Spathoglottis* specimens, with their tall, plicate foliage, are handsome plants. Thrips are often troublesome, and unless the house is vaporised at frequent intervals it will be necessary to sponge the leaves with a reliable insecticide. When the foliage decays, the corms are allowed a period of rest, in cooler and drier conditions.

SHADING.—The time of year has arrived when it is advisable to have the roof blinds fixed and ready to draw down at any time. This is especially important for the cool house, and for structures that contain *Phalaenopsis* and other delicate plants. The blinds are usually made of No. 5 canvas, or wood, and on the cool and intermediate houses they should be fixed about six inches above the glass. With *Dendrobiums*, however, and other Orchids which require a certain amount of sunlight, these parallel rafters are not necessary. The front lights and the ends of houses facing west and south must also be shaded. Old blinds can be used for this purpose, or the glass may be stippled over with a mixture of whiting and milk.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Manor House, Elmfield Manor, Basingstoke, Hampshire.

PROPAGATING DAHLIAS.—If the Dahlias are to be propagated from cuttings, the old tubers should be brought into a warm house. The roots need only be covered, much in the same way as when forcing Rhubarb, and old potting soil or leaves will serve for compost. Only a few plants will be needed for this purpose; it is a pity to use more than are absolutely necessary, as the process does them appreciable harm. They should not be subjected to a high temperature; cuttings will push out in a temperature of 50° to 55° if the plants are freely syringed. There is no necessity to take cuttings with heels, but they should be taken off before the stems become hollow. The cuttings will root freely in a propagating case with pure sand, if provided with moderate bottom heat. These plants will be found especially valuable for filling large beds; they need not be staked, but can be merely pegged down, as, I believe, used to be a fairly general practice a few decades ago.

POLYANTHUS AND AUBRIETIA. The Polyanthuses are now commencing their flowering season, and in some gardens serious loss of flowers may be experienced from the action of birds. Attacks may be reduced by stretching black cotton over the plants. Polyanthuses form excellent bedding plants. By a process of selection while in flower it is possible to pick out plants of nearly the same colour, to be used in a colour scheme in the following year. Plants may be raised from seeds sown at the present time under glass. If these, when pricked off and hardened, are set out to flower in a trial border, the colours may be selected during the first year of flowering. Yellow Polyanthuses and purple Aubrietia make a charming combination. Seeds from the purple Aubrietia sown in May or June and pricked out in a nursery bed, will form useful plants for flowering during the following spring. The shade of colour will vary slightly, but not more so than that of the Polyanthus with which they are associated. Named varieties of Aubrietia are certainly preferable for the rock garden, but in that case we must propagate by cuttings or division. A pretty combination is a Dr. Mules, or lavender-flowering Aubrietia, near or beneath *Cytisus praecox*. Other good varieties of Aubrietia are *Moerheimii*, *Prichard's A. I.*, *Mrs. Lloyd Edwards*, *Leichtlinii*, *græca superba* and *Fire King*. The last-named is rather a difficult colour to associate with other plants. Many of those mentioned grow vigorously and will need restriction. For the rock garden, the dry-wall garden, and a ground-work or edging in the spring garden, the Aubrietia is hard to beat.

ARREARS OF PLANTING.—The recent falls of snow will have made the soil very wet, and will still further delay any planting of trees and shrubs which has still to be done. In this part of Hampshire 15 inches of snow fell on the night of February 25, and as it drifted to a considerable extent the roads were almost im-

passable. There have been several more inches since then, but at the time of writing it is rapidly disappearing. By means of the wind which we may expect during March, the soil should be dry sufficiently soon for any arrears of planting to be made good.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

PRIMULA MALACOIDES.—This is a useful plant for furnishing the greenhouse or conservatory during the autumn and winter months. It is easily propagated from seed sown any time during the spring. The plants require cool treatment during the growing season, and are easily grown, but when they begin to produce their flower-spikes water must be kept from the centre of the plants, or the flowers will damp.

CARNATIONS.—The earliest plants of Carnations will now be sufficiently well rooted to be repotted into 5-inch pots. A compost of good fibrous loam, naturally decayed leafsoil, a little soot, and coarse sand, will be suitable. Pot the plants firmly and place them on a shelf near the glass. Keep them rather close for a few days, and spray them with rainwater twice daily during bright weather. Pot rooted cuttings when ready, and treat them as advised above. A few early blooms of "Malmisons" may be obtained by placing some of the more forward plants in a warmer house. Keep the main batch as cool as possible, and as a safeguard against "rust" spray them with a reliable specific once a fortnight.

STATICE SUWOROWII.—*Statice Suworowii* is very easily cultivated, and is useful for the conservatory and greenhouse during the summer. A sowing may be made now in a shallow pan filled with light sandy soil. Place the pan in a medium temperature until the seedlings are through. When large enough to handle, the young plants may be potted into 3-inch pots, and kept growing gently in a greenhouse temperature. They must be potted into 6-inch pots to flower; after they are well rooted stimulants must be afforded frequently, or the flowers will be weak and of poor colour.

LOBELIA TENUIOR.—*Lobelia tenuior* is a useful subject for the greenhouse during the summer. A small sowing made now, and others at intervals of a month, will furnish plants all through the season. The young seedlings may be transferred into 3½-inch pots, in which they will flower.

BROWALLIA SPECIOSA is another useful annual suitable for pot culture. It requires much the same treatment as advised for *Lobelia tenuior*. The young plants may be potted into 3-inch, and again into 5-inch, pots. They will have to be stopped two or three times if they are to form a bushy habit.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. Lord North, Wroxton Abbey, Banbury, Oxfordshire.

THE REGENT BAD WEATHER.—At the time of writing, this district is covered deeply with snow, a condition which is fairly general. In view of this, many gardeners may be forced to modify their plans. In districts with clay soil all outdoor work will be delayed for a considerable period. In many gardens it is customary to transfer Peas and Beans raised in boxes to the open ground early in March, an operation which is obviously impossible this season. It is extremely doubtful if the seedlings which were sown as directed early in the season will be of any use when the soil is dry enough to allow of planting, as the dull, sunless weather, together with the delayed planting, will cause the plants to be weak and useless for the purpose intended. It is wise, therefore, to make further sowings of early Peas and Broad Beans in boxes as previously directed. Also, if considered necessary, Lettuce and many Brassicas, including Cauliflowers in variety, Brussels Sprouts, Cabbages, and early Broccoli may be raised in boxes in cool conditions with a view to transferring them out of doors when the weather permits.

LEEKS. A further sowing of Leeks may be made, as sowing out of doors for the main crop may not be possible at present.

CUCUMBERS.—Make a sowing of Cucumbers to provide a succession to those sown as advised on p. 46. These are now growing rapidly, but rather weakly on account of the bad weather. The regulation of the growths should be attended to as required. Allow the leader to approach to within a foot of the top of the allotted space before being stopped, but stop the laterals at every second joint. Avoid overcrowding, entirely remove surplus shoots, and distribute the remainder evenly over the trellis. The atmosphere of the house should be humid at all times, but a little ventilation cautiously applied is beneficial on mild days. An occasional light vaporising will prevent the attacks of aphids.

TOMATOS.—A sowing to provide fruit from July onwards should be made, as previously advised.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady Nunburnholme, Warton Priory, Yorkshire.

THE ORCHARD HOUSE.—In the earliest house the fruit will now be well set. With the assistance of a little fire heat the temperature should be kept up to 50° or 55°, with a small amount of air night and day except in very severe weather. Peaches and Nectarines set more readily than almost any other stone fruit, and should be kept in a compartment by themselves. Plums set well, but in unheated houses much depends on the weather. Pears and Cherries are the most shy setters; both fruits require a dry atmosphere kept in motion by open ventilators, even at night, and this is not possible during sharp frosts. No attempt should be made to have any of these trees in flower in the general house before the middle of March or beginning of April. Peach and Nectarine blossoms are now expanding, and where possible a little heat should be kept in the pipes, sufficient to keep up the temperature to 48° or 50°, with a little air. Brush the trees lightly every day with a rabbit's tail; or tap the trees two or three times daily to scatter the pollen. Pot trees which have been top-dressed should be carefully examined to see if they need water; the inexperienced may easily be deceived by the fact that there may be plenty of moisture in the fresh compost, whilst the portion underneath is much too dry. Pears, Apples, Plums, and Cherries may be set together in one house. Pears should occupy the warmest end of the house and direct syringing must be discontinued when the trees are in flower; but if the house is light, airy, and well ventilated, the floors may be moderately moistened early in the morning, and again in the afternoon, on fine, bright days. Another preliminary operation is fumigation, which must be carried out whether greenfly is perceptible or not. No amount of attention to other details would prevent a serious check from taking place if aphids were present when the flowers opened. When in full flower the trees present a charming appearance. Fruit being the first object, they must be fertilised in the usual way on fine days. Let the night temperature be kept up to 45° or a little more on mild nights, and when the fruits are set, syringe trees every morning when the temperature is rising, and again in the afternoon when sun-heat produces a genial atmosphere of 60° to 65°. This temperature is quite high enough for the trees, and must be regulated by plenty of fresh air. Disbudding, pinching, and thinning the fruits will require attention in due course. Strict attention must be paid to the detection of grubs. A closely folded leaf is a sure indication, and this must be pinched or removed immediately. Careful attention must be given to watering. Young trees will hardly require stimulants until after the fruits are stoned, but once this stage is passed, weak liquid manure, liquid soot and guano water will improve the quality of the fruits. The latest section, intended to come on under the influence of sun-heat only, may be ventilated night and day until the trees come into flower, when gentle fire-heat, if only for a fortnight, may be the means of securing a crop of fruit.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would oblige by obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the Editors. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Local News. — Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MARCH 13—

United Hort. Ben. and Prov. Soc. Ann. meet.

TUESDAY, MARCH 14—

Royal Hort. Soc.'s show of Forced Bulbs (2 days) B.G.A. (Leeds Branch) meet.

WEDNESDAY, MARCH 15—

Royal Meteorological Society meet at 7.30 p.m. (Lecture on "The Meteorology of the Globe in 1911," by Sir Napier Shaw.)

THURSDAY, MARCH 16—

Linnean Soc. meet. at 5 p.m.

SATURDAY, MARCH 18—

Lancaster Hort. Soc. meet. (Lecture on "Allotments.") B.G.A. (Leamington Branch) meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty years at Greenwich, 41.6.

ACTUAL TEMPERATURE —

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, *Thursday*, March 9 (10 a.m.) Bar 29.5, temp. 41°. Weather—Misty.

SALES FOR THE ENSUING WEEK.

MONDAY AND TUESDAY—

Nursery Stock, at Turner's Nursery, Uxbridge, by Protheroe & Morris, at 12.

MONDAY, WEDNESDAY AND FRIDAY—

Hardy Bulbs and Herbaceous Plants at 12, Roses, Shrubs, etc., at 1.30, by Protheroe and Morris, 67 and 68, Chancery Lane, E.C.

MONDAY AND WEDNESDAY—

Rose Trees, Shrubs, Perennials, Bulbs, etc., at 12.30, at Stevens' Rooms, 58, King Street, Covent Garden.

WEDNESDAY

Miscellaneous Bulbs, including Japanese Liliums, at Protheroe & Morris' rooms.

THURSDAY—

Roses, at Protheroe & Morris' rooms.

FRIDAY—

Orchids, at Protheroe & Morris' rooms.

Relation of Plant to Soil.

The first of two lectures by Dr. E. J. Russell, Director of the Rothamsted Experiment Station, was delivered before the Royal Institution on February 29, on the subject of "The Plant and the Soil—Nature's 'Cycle'."

Setting out with the familiar observation that the upper layer of the soil alone is well suited for plant growth, it was shown that this distinction did not always exist. When the soil was first laid down, it was all like the subsoil, but something had happened to bring about the change. Two methods present themselves by which the problem can be attacked: on the one hand some subsoil may be exposed to the weather, and the experiment carried out in such shape that the transformation into surface soil can be closely observed; or, on the other hand, careful analysis can be made of the surface and subsoils with a view to discovering wherein lies the difference between them. The first is called the observational method, and is familiar to all gardeners and field workers: the other is the analytical method, and necessitates laboratory work.

In practice, both methods have to be adopted. Strictly speaking, a third method—the synthetic method—is desirable in addition: this involves reconstruction of the soil on the basis of information acquired by the first two methods: but progress has not yet gone far enough for this.

Whenever subsoil is left exposed to the air it begins to cover itself with vegetation. The first plants that come up draw some of their food material from the soil, and they build up their leaf and stem tissues partly out of this and partly out of the carbon-dioxide in the air. The process is in one important respect very much like rolling a ball up a hill—energy has to be put into it; and in this case the energy comes from the sunshine. But neither energy nor matter is ever destroyed in Nature, and, in consequence, when the plants die and their leaves and stems become mingled with the soil, they add to its mineral matter both organic matter and energy.

Direct experiment shows that this addition of plant residues is beneficial to plant growth. Other evidence all tends the same way, and the general conclusion is that the difference between the surface and the subsoil lies largely in the presence of the residues left by the generations of plants that have lived and died there. The problem now is to find why the plant residues are so beneficial.

This is as far as observation will take us: it is now necessary to bring the problem into the laboratory, in order to investigate it further.

The plant residues consist mainly of four elements: carbon and oxygen in large proportions; hydrogen and nitrogen in smaller proportions. In addition, there are lesser quantities of phosphorus, calcium, magnesium, potassium, and other substances. The chief reaction in the soil is soon found to be an oxidation: oxygen is absorbed in great quantities, and carbon-dioxide is given out in approximate equal volume. The carbohydrates of the plant disappear very rapidly: some of the cellulose takes longer, and gives rise to the black humus familiar to all gardeners. The nitrogen appears as nitrate. This is not quite what one would expect. In the decomposition of protein as it has been studied in the laboratory—and a prodigious amount of work has been done on the subject—the result is always a remarkable variety of acid, known as amino-acids. Under the action of putrefactive bacteria, the decomposition is carried a stage further, and ammonia and other bases are produced, which are largely responsible for the very strong odour of decaying substances—but nitrates are not found by the processes of the chemist. At first sight, therefore, it looks as if the process of the chemist was quite distinct from that of the soil, but closer study shows that this is not so. All the substances isolated in the chemist's decomposition can be found represented in the soil, and, what is still more to the point, if a trace of chloroform or toluene is added to soil no

nitrate is formed, but ammonia accumulates instead. When a trace of untreated soil is added, the process starts again, and nitrate is found as usual. Thus, it appears that ammonia is the precursor of nitrates, and is itself preceded by the amino-acids of the chemist. The difference between the laboratory decomposition and the soil decomposition is simply that the latter is carried several stages further: up to the point reached in the laboratory the two processes appear to be substantially the same. Thus Nature operates in the same way, whether in the laboratory or the field: the differences are only in the lengths to which things go.

This decomposition is absolutely indispensable to the plant: the initial products—the proteins—are useless for plant nutrition; the intermediate products are not much good; the ammonia is considerably better, while the final stage—the nitrate—is the best of all.

During this decomposition energy stored up by the plant during its lifetime is run down, so that there is a transformation, both of material and of energy. We are accustomed to think of Nature as somewhat prodigal: the vast number of seeds produced by certain plants, the hosts of spores produced by fungi to ensure survival, all indicate this. But in the soil Nature is in a far more economical mood. The energy and material are not wasted: they go to support a vast population of the most varied kind, ranging from the microscopic bacteria to the earth worm. All these depend on plant residues for their food and their energy. But theirs is no case of taking all and giving nothing in return. Their work is nothing less than the production of food for the plant: preparing new plant food out of old plant residues.

Thus we have a great cycle going on in the soil: dead plant residues mingle with it, and give life to countless micro-organisms, which in turn convert them into food for a new generation of plants.

It is necessary to set some limits to the enquiry, and so we restrict ourselves to the production of nitrates. This process is the work of a great number of organisms, some of which carry out the first stages, and others the later stages. It resembles the process of making munitions, in that the first stages can be brought about by a large variety of workers, while later stages are much more specialised, and can be effected only by one or two special workers. Indeed, in the eighteenth century, Nature's process of manufacturing nitrates was actually under the Ministry of Munitions of the time. Great wars were going on, which consumed vast quantities of nitrate: there were no Chilean deposits available, and no artificial nitrates: all that was wanted had to be made by this soil process. Nitrate beds were made up, much like Cucumber borders; they were kept moistened by liquid manure, etc., and in course of time great quantities of nitrates were formed, which were afterwards washed out.

The process is not free from waste:

starting with 100 parts of nitrogen as protein, one never recovers 100 parts of nitrogen as nitrate: there is always a loss. But the fault does not appear to be with the special organisms that carry out the last stages of the process, for at least 96 per cent. of the ammoniacal nitrogen is recovered as nitrate. It is not clear that it lies with the organisms producing ammonia: at any rate, they can work without loss. The probability is that the loss

known: the organisms associated with clovers and other leguminosae, and the free living nitrogen-fixing organisms. They differ very much in appearance and mode of life, but for their work they both require a source of energy; for the process of nitrogen fixation, like that of plant growth, is like rolling a stone up a hill. In place of sunlight, these organisms get their energy from the combustion of sugar.

perature, which is operating to keep down these numbers. As it is put out of action by heating to 55.6° C., or by traces of volatile antiseptics, and can be re-introduced by adding a little untreated soil, it is presumably biological, and the evidence shows that it consists in part at least of certain soil amoebae: it is quite possible, of course, that other forms are involved as well. But whatever the detrimental organisms are, they impede the work of the organisms producing plant food in the soil. Fortunately, they are put out of action more easily than the useful organisms, so that we get the apparent paradox that any process fatal to life (but not too fatal) proves ultimately beneficial to the soil life, while any process beneficial to life proves ultimately harmful. Long frost, drought, and heat, therefore, benefit the useful makers of plant food, while prolonged warmth, moisture, and treatment with organic manures lead to deterioration, or to "sickness," as the practical man puts it.



FIG. 54.—*BEGONIA MANICATA CRISPA*.

Photograph by E. J. Wallis.

arises from some of the nitrate that has been actually formed.

However it arises, this loss, as well as the leaching out of nitrate by rain, would in natural conditions bring the stock of soil nitrogen to a very low level, if there was no counter-balancing process, and for the last fifty years chemists and bacteriologists have been searching the soil very thoroughly to find out how these gains are brought about. Two sources are now

It must not be supposed, however, that the organisms bringing about these changes are the only ones in the soil, or that they lead their lives quite independently of the rest of the soil population. Indeed, they could hardly do that in any case, for there is only a limited store of food and energy, and whatever is not helping them is hindering them. Numerous experiments show that there is some factor, neither food, air, water, nor tem-

BEGONIA MANICATA CRISPA (see figs. 54 and 55).—The mad leaved Begonia (*B. phyllomanica*) first appeared in the Botanic Garden at Munich about 65 years ago. Its madness takes the form of extraordinary leaf proliferation. "It produces from the stem, branches and petioles innumerable leaflets which, on being detached and placed on moist ground, produce roots and perfect plants." There are good examples of this Begonia in the Kew collection, where they are at present in flower. Its peculiarity suggests the thousand-headed Kale. At least as remarkable in a teratological sense is *B. manicata crispa*, also to be seen at Kew, the leaves of which are divided and curled after the manner of a curly-leaved Cabbage. The type (*B. manicata*) is a native of Mexico, and is fairly well known as a garden plant, being grown for its tall, elegant branching cymes of small, pink flowers. It has ordinary, fleshy, lobed leaves, with conspicuous red scales on the petioles and principal nerves. A variegated form of it (*maculata*) is in cultivation, and there are several hybrids of which *B. manicata* is one of the parents. The crisped variety was obtained from Messrs. F. SANDER AND SONS in 1903. That the curled margin is caused by proliferation, and is not due to sub-division, as in the case of the crisp-leaved Harts' Tongue Fern, the fuzzy *Nephtodum*, and the curled Cabbage, is evident in the fact that the curled margins continue to grow and divide and form fresh curls long after the leaf has fully developed. Probably every curl is capable of developing a plant in favourable conditions. The largest leaves are about 9 inches across, and they are as succulent and brittle as Summer Cabbage. There is also a green-leaved Begonia at Kew with the same peculiarity, which came from Messrs. HAYGARD and SCHMIDT, Erfurt, in 1914, under the name of *B. Bunchii*. The leaves of this are purple on the underside. Nothing is known as to its origin.

MUNICIPAL TRAINING FOR WOMEN GARDENERS.—The scheme of the Parks Committee of the Manchester City Council for the training of women gardeners is proving successful. A batch of students has completed the three months' course at Heaton Park, and, with the exception of one, who had to give up the work through ill-health, all have obtained positions as under-gardeners in private gardens. The women at Manchester are receiving the same pay as men, viz., 18s. per week, in addition to furnished apartments, milk and vegetables. The training of a second batch has now commenced.

MR. W. MARSHALL, V.M.H.—Our readers will deeply sympathise with Mr. WILLIAM MARSHALL, V.M.H., late chairman of the R.H.S. Floral Committee, on the death of his wife, which occurred on March 2, at Auchinraith, Bexley, Kent.

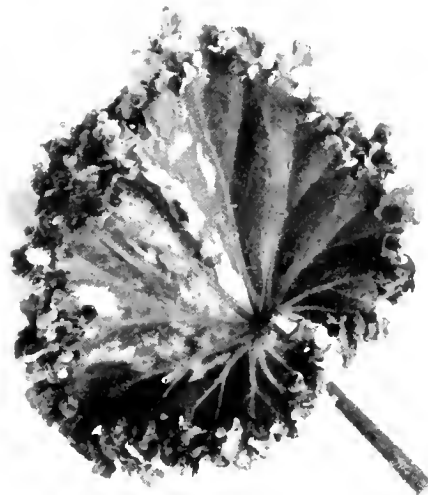
R.H.S. MEETINGS AND COMMITTEES.—The Annual R.H.S. Show of Forced Spring Bulbs will be held at Vincent Square on Tuesday and Wednesday next. The Narcissus and Floral Committees only meet on this occasion. The next ordinary fortnightly meeting is fixed for Tuesday, March 28, when all the committees are asked to meet as usual. At the meeting of the Council on March 7, the question was raised whether, in view of the urgent need for economy on the part both of individuals and corporate bodies, the Chelsea and Holland House Shows should be suspended this year. In the course of the discussion it was agreed that to suspend these exhibitions would be to deal a severe blow to the horticultural trade of the country. The members of the Council, in coming to the decision to hold the shows as usual, expressed their strong conviction that it is the duty of the Council to continue to do all in its power to maintain the prosperity of the horticultural industry, for not only is it to the national interest that horticulture should not suffer more than is inevitable during the war, but also it is of the utmost importance that this trade should be in a position at the conclusion of peace to meet successfully the strong competition with which it is bound to be confronted. At the same time it is the intention of the Council to loyally meet the call from the Government for the exercise of economy, and steps have been taken to reduce as far as possible the demand for labour and all avoidable expenditure. *W. Wilks, Secretary.*

ASSISTANCE FOR FARMERS AND MARKET GARDENERS IN HESTON AND ISLEWORTH.—The Local Committee appointed by the Middlesex War Agricultural Committee held its first meeting at the Council House, Hounslow, on March 1, when Mr. W. G. LORROIT, J.P., C.C., was elected chairman of the committee, and Mr. JOHN WEATHERS and Mr. H. J. BAKER, joint hon. secretaries. The chairman referred to the letters received from the Board of Agriculture pointing out the difficulty of maintaining production, owing to the disorganisation of the labour supply, and to the probability that this difficulty is likely to become greater. It was decided to ask men and women of all classes who have time at their disposal to render services at local farms and market gardens during the coming spring and summer, and it was pointed out that the local growers will be only too willing to pay for all labour they may utilise, whether skilled or unskilled, at current rates. It was decided to open a register at the Council House, Hounslow, so that all farmers and market gardeners requiring labour, and all persons willing to render assistance, may register their names. The committee also decided to approach the Education Committee with a view to obtaining the assistance of schoolmasters in preparing lists of boys who would be able and willing to work in market gardens and farms in fine weather when required. It was agreed that the services of boys might be utilised from time to time for short periods in such a way as not to interfere unduly with their school work. Payment would be made for the services rendered by the boys. Attention was also given to the question of assisting the smaller growers by organising co-operation in (a) carrying of produce to market, (b) sale of produce, (c) purchase and use of implements, seeds, manures, etc., and on this matter the hon. secretaries were asked to communicate with all the growers in the district whose holdings are less than 25 acres. The question of cultivating lands at present unoccupied was also

discussed, and it was decided to approach the owners of several pieces of land in the locality with a view to their immediate utilisation for purposes of food production.

HELP FOR FRENCH FARMERS. Within the next few days the Agricultural Relief of Allies Committee (16, Bedford Square, W.C.) will send out a further consignment of relief to French peasants who are bravely tilling their fields in the rear of the firing-line. It will consist of 1,000 head of poultry, 1,200 sacks of seed Oats, and 800 sacks of seed Potatoes. The War Office has provided facilities for the free transport between England and France, and on the arrival of the relief on the other side of the Channel it will be carried and distributed by the French Government. The fund seeks to offer similar relief to all invaded Allied countries, and invites the help of British farmers in carrying out its purpose.

SUGAR BEET IN EAST ANGLIA.—Sugar Beet appears to be growing in favour as a crop. According to the *Agricultural Gazette*, 20,000 tons of Beet (6,000 in excess of previous years' consignments) were dealt with in the factory at Cantley. It is claimed that the sugar manufactured at home is superior to that from the



(Photograph by E. J. Wallis)
FIG. 55 LEAF OF BEGONIA MANICATA CRISPATA
(See p. 145.)

Continent. The fact that importation of sugar is to be reduced should act as an encouragement to the farmer to give a trial to the new crop. A very small point, but one which if adopted would lead automatically to a considerable economy. Why not make the cubes of sugar about three-quarters of their present size? For many, at all events, the standard lump is too large, and is wasted or used unnecessarily.

WAR ITEMS.—Mr. F. G. PRATT, son of Mr. PRATT, gardener at Clayton Hall, Staffordshire, and late fruit foreman in the Hendre Gardens, Monmouth, has been given a commission in the 9th Welsh Regiment. Second Lieutenant PRATT joined the 5th South Wales Borderers at the commencement of the war.

VEGETABLES IN GERMANY.—The sandy plains of Prussia produce large quantities of Asparagus, much of which is used for canning. It is reported that several millions of this prepared after the last crop are still unsold, and the producers are appealing to the Government to have the Asparagus introduced into the diet in hospitals and messes on the "no meat" days. From

this it is to be inferred that the German consumer is sufficiently affected by the war to be unable to afford such luxuries as Asparagus. It is curious to note that maximum prices have been fixed for other vegetables of which the nutritive value is no higher.

PUBLICATIONS RECEIVED.—*La Culture Moderne*. Par R. de Noter. (Paris: Charles Amat, 14, Rue de Mézières.)—*Bulletins Nos. 258 and 260*—viz.: *Mealy Bugs of Citrus Trees* and *The Determination of Availability of Nitrogenous Fertilisers in Various California Soil Types by Their Nitrifiability*. (Berkeley, Cal.: University College of Agriculture, Agricultural Experiment Station.)—*Report of the College of Agriculture and the Agricultural Experiment Station of the University of California, 1914-1915*.—*Twenty-Eighth Annual Report of the Agricultural Experiment Station of Nebraska, 1915*. (Lincoln, Neb.: U.S.A.)—*Technical Bulletin No. 22*, of Michigan Agricultural College Experiment Station, *Effect of Temperature on Soil*; *Special Bulletin No. 72*, *Some Ginseng Troubles*.—*Annals of the Missouri Botanical Garden*, Vol. 11., No. 3, September, 1915. (St. Louis, Missouri, Board of Trustees of the Botanical Garden.)—*Bulletins Nos. 404, 405, 406, 407, 408, and 409* of the New York Agricultural Experiment Station, Geneva, N.Y., U.S.A.—viz.: *Inspection of Feeding Stuffs*, *Potato Spraying Experiments at Rush*, *Dwarf Apples*, *Blooming Season of Hardy Fruits*, *Ripening Dates and Length of Season for Hardy Fruits*, and *Germ Content of Stable Air and its Effect upon the Germ Content of Milk*; *Technical Bulletins Nos. 42, 43, 44 and 45*—viz.: *The Tree Crickets of New York*, *Human Milk*, *Ascochyta clematidina: the Cause of Stem-Rot and Leaf-Spot of Clematis*, and *Inheritance of Certain Characters of Grapes*.—*Thirty-Eighth Report of the Connecticut Agricultural Experiment Station for the year 1914*. (Hartford, published by the State of Connecticut, 1915.)—*Report on the Field Trials on the College Farms in 1915*. By John Dunlop, B.Sc. (Midland Agricultural and Dairy College, Kingston-on-Soar.)—*Orchid Awards, 1850-1915*. Royal Horticultural Society. (London: Spottiswoode & Co., Ltd.) Price 5s.—*In a College Garden*. By Viscountess Wolseley. (London: John Murray, 50A, Albemarle Street.) Price 6s. net.

AMERICAN NOTES.

THREE large flower-shows will be held in the United States in the coming spring. The largest and most important opens in Philadelphia on March 25, and closes April 2. About 20,000 dollars are offered in prizes. The schedule is very comprehensive, distinct classes being provided for professional gardeners and commercial growers. While all plants will be staged on the opening day, there are special days set aside for Roses, Carnations, Sweet Peas, and other flowers. This exhibition will undoubtedly be the most imposing yet held in America. It is being arranged under the auspices of the Society of American Florists, the leading commercial horticultural organisation, assisted by the Rose, Carnation, and other kindred societies. These National shows are held triennially, previous successful ones having taken place in Chicago, Boston, and New York.

New York will hold an "International" flower show from April 5 to 12 in the Grand Central Palace, at which 15,000 dollars are offered in prizes. Special features here will be Rose Gardens and Rock Gardens. The last-named type of gardening is at last coming very much to the fore. Many of your fine Alpines are impossible owing to our varied summer, but there are, nevertheless, other plants available which do splendidly.

The Massachusetts Horticultural Society will hold twelve exhibitions in Boston in 1916, more than New York and Philadelphia combined. The most important one comes in the middle of May,

when considerable material unavailable at the earlier shows can be had. Six thousand dollars are offered in prizes at this show. Rock Gardens, Rhododendrons, Orchids, Roses, and late Tulips will be a few of the leading attractions.

The horticultural trade, on which the great European war a year ago had a very unfavourable effect, has now practically recovered. We shall no doubt feel its effects again later, but meantime business in plants, cut flowers and landscape gardening is remarkably good.

The various special horticultural organisations had a generally successful year in 1915. The largest of these, the Society of American Florists, now has 2,000 members, with a Scotchman, David McRorie, of San Francisco, at its head. The American Carnation Society is the most energetic of the societies devoted to special flowers. It held a very successful show and convention in St. Louis, Mo., in January. The American Rose Society, Chrysanthemum Society of America, the American Sweet Pea Society, and American Paeony Society, are all doing good work, but their membership is pitifully small for such a country as this. The more recently formed Gladiolus and Dahlia societies have started off with a good membership.

The National Association of Gardeners, an organisation similar to the British Gardeners' Association, has been in existence a little over four years. It had a membership of 1,000 on January 1, and is hoping to add 500 new members in 1916. This organisation looks after the interests of the private gardeners. W. N. Craig, Brookline, Mass., U.S.A.

THE ROSARY.

ROSE PRINCE DE BULGARIE.

ACCORDING to the *Revue Horticole* (February, 1916), M. Forestier has solved, in an elegant manner, the problem of what to do with names such as the above, which was given in honour of Ferdinand of Bulgaria, now no longer honoured. Prince de Bulgarie has been deposed from his place in the roseraie de Bagatelle, and Madame Marcel Delauney reigns in his stead.

ROSA GIGANTEA, COLLETT M.S., AND ROSE FORTUNE'S YELLOW.

SOME attention has lately been given to this interesting Rose (see p. 514, May 11, 1912), and now that it has been flowered not only at Kew, but by more than one amateur, it may be hoped that the time is near at hand when it may be made use of by the hybridiser. Until recently I was under the impression that it had only been flowered in this country under glass, but I am told that one of our most capable amateur rosarians succeeded in flowering it some years ago. I think in Kent, against the wall of a greenhouse in the open air. However this may be, Rosa gigantea is too rank a grower to be likely to be of much value itself in English gardens, and it is to hybrids from it that we should look for progress. It was first found by Dr. Watt in 1882, at Manipur, and afterwards was discovered by General Sir Henry Collett in the Shan Hills, between Burmah and Siam, in 1888. Shortly after, the first specimens were sent to Europe through the agency of Sir David Prain. Prof. Crépin wrote of it:—"General Collett's discovery is worthy of the attention of naturalists and amateur rosarians. If its introduction and cultivation in Europe is effected, R. gigantea will enrich the collections of beautiful forms by its enormous corolla and fine foliage. Moreover, by crossing it with other species, it will become the source of hybrid productions, probably superior to those of R. indica."

The latter part of this prophecy has yet to be realised, but it is probable that we already possess one derivative or connection of R. gigantea in Fortune's Yellow (see supplementary illustration, May 16, 1903), a Rose of great beauty, which, like R. gigantea, seems to require as a condition of its flowering some protection, absolute freedom of growth, and not too rich a soil.

Prof. Crépin immediately recognised R. gigantea as a distinct species, distinguishing it from R. indica, with which it has some affinity, (1) by its inflorescence, which is usually solitary, while that of indica is usually many flowered; (2) by its outer sepals being entire, usually without appendages; (3) by its flowers, which are several times larger than those of indica (5 or 6 inches across), and pure white; and (4) by its unarmed flowering branches. He goes on to point out that Fortune's Yellow presents many points of resemblance with the Rose of the Shan Hills. Like it, Fortune's Yellow is of climbing and vigorous growth, and its buds and sepals are similar. On the other hand, its flowers and foliage are less ample and its stems are strongly thorned. Writing again on the subject a few years later, he stated that further study had made him think the affinity between the two Roses was yet closer, and that in the future it might be found possible to unite them under the same specific name. It is rather curious that before this M. Germain St. Pierre contributed an article on the subject of Fortune's Yellow to the *Journal des Roses* (1882, p. 175). This Rose evidently perplexed him somewhat, and he regrets that the single form of the Rose was unknown, but concludes that it ought to be regarded as distinct from others in cultivation, and as probably a true species. He proposed for it the name of *Rosa anabilis*, a name, however, which has not been generally adopted. Messrs. Jamain and Forney take the same view of the distinct character of this Rose, calling it *Rosa lutea* Fortunei. There can be little question that it has proved something of a puzzle to those who have given attention to it. The majority of catalogues, including that of the National Rose Society, include it among the Noisettes, but I think that no one who has regarded its foliage, or considered the character of its sharp and hooked thorns, would seriously place it here, even if the single period of flowering could be overlooked. Shirley Hibberd was disposed to connect Fortune's Yellow with the sempervirens group, while Lord Brownlow and Miss Kingsley prefer to connect it with the Banksiae, relying chiefly perhaps on the method of the inflorescence, which is borne on small stalks growing from the laterals of the second year. It is perhaps partly because of this habit of flowering that it is somewhat unpopular, and is thought, even when otherwise doing well in this country, to be shy in flowering, for if pruned like a Noisette the result is failure. Pruning in the ordinary sense should never be attempted.

Fortune's Yellow was introduced into this country from China in the year 1845 by the traveller, Robert Fortune, who, among many other achievements, first procured the introduction of the Tea Plant into India. When doing well it produces long and straggling growths, which bear many loosely shaped flowers of shades of yellow and buff, curiously flaked with coppery-pink. It is probably better known in the Riviera than in this country, where, being a very early Rose to flower, it doubtless appreciates the protection of a glass-house.

If, as above suggested, Fortune's Yellow is connected with Rosa gigantea, it must, of course, be of hybrid origin, and it is quite possible that the double Banksiae may be among its ascendants; but, if so, whence did Fortune's Yellow obtain the thorns which are so marked a feature of this Rose? R. Banksiae is practically unarmed. It would seem that a series of experiments in hybridising from R. gigantea might prove of great interest.

Returning for a moment to the characters of R. gigantea above referred to, it would seem that the solitary inflorescence is not quite constant, and one of Dr. Watt's original specimens had three flowers, while in the matter of colour further research may show variation, and it is said that plants with pink flowers have already been noticed. If this is so, definite reports will doubtless be furnished later. *White Rose*.

THE MARKET FRUIT GARDEN.

A MORE unpleasant month than February, or one more hindering to work on the land, was probably never experienced in this country. In my district rain or snow fell on 22 out of the 29 days, the total measurement of rain and melted snow being 4.67 inches, or about double the average for February. Frost occurred on ten nights, the most severe being 10 degrees, 7 to 9 degrees having been recorded on three other occasions. Premature vegetation was checked to some extent, but still fruit buds were a little more advanced at the end of the month than at the beginning. The amount of snow was the greatest experienced in any one of the fifteen previous winters of my residence in my present place, and the snow remained longer on the ground. On the morning before the thaw began the depth was 5 inches on the level ground, the greatest I have ever measured.

BIRDS AND BUDS.

No bud-eating by birds on Plum trees had occurred up to February 21, the day before the snowy and frosty period set in. It was hoped that the season might be exempt from this form of fruit destruction, as there were only two or three bullfinches noticed. On the 25th, however, a slight attack was noticed on the variety Monarch near a hedge in two orchards, which increased in a day or two. The weather prohibited spraying until the 28th, when snow and rain held off for half a day. Lime-sulphur of winter strength was then applied to a portion of the Monarch Plums; but rain followed before the stuff had dried on the trees, and all had to be done again, with the rest of the trees on the next opportunity. Even then rain held off only long enough to allow of the stuff drying on a portion of the trees, and this is only one of numerous examples of the waste of time and money in spraying. However, there seems reason to hope that, up to the time of writing, enough lime-sulphur has remained on the buds, as a rule, to disgust the birds, at least in the part of the orchard attacked, to a considerable extent. On the last day of spraying an examination of the ground around trees in the outside row was made, bud scales scattered on the surface being stamped in. On some following days the examination was repeated, and no fresh bud scales were found. If much more rain should occur, it is to be feared that the attack will be recommenced. In any case, it seems that the birds have only been driven from Monarch to Czars, which have now been sprayed. As a rule, no varieties other than Monarch, Coe's Golden Drop, Greengage, and other choice Plums grown only for home use, are attacked by birds to any appreciable extent, and, as all varieties were sprayed last year, it was not intended to spray Czars. Early Rivers, Victoria, President, Gisborne's Black Diamond, or Belle de Louvain this season. The trunks and branches of the trees are almost free from moss, spraying once in two years being sufficient to keep them fairly clean; and spraying big trees with lime-sulphur of winter strength (3½ gallons to 40 gallons of water) at the advanced price of the materials is expensive work. So far as clear evidence enables me to decide, bullfinches are the only birds which eat my Plum buds. Chaffinches and tits have been shot

occasionally for investigation, but no buds were found in their gizzards.

FURTHER SEARCH FOR APHIS EGGS.

Since my last set of notes was written, search has again been made for aphis eggs on Plums and Apple trees, with a negative result. On March 1 several trees of every variety in my oldest orchard of Plums were examined with a lens, trunks, main branches, crotches of small branches, and fruit spurs being inspected. Not a single aphis egg or aphis was found. The same result occurred in part of an orchard of Apples. Moreover, acting on the suggestion of Mr. John Smith, on page 119, hedgerows and shelter trees around the orchards were also examined, again with a negative result. The trees and shrubs examined included the Ash, Oak, Willow, Maple, Elder, Wild Plum, Blackthorn, Whitethorn, Hazel, Privet, Blackberry and Mirobalan. A few Docks in a grass roadway were also included, some being noticed in the cultivated portions of the orchards. No Thistles, except some just out of the ground, which were not in existence in the egg-laying season, are to be found in the orchards, and those in the hedges are withered. Some Black Poplars grown as a wind break at the bottom of one orchard have not been yet examined. If they commonly have aphis eggs upon them, as Mr. Smith states, they should not be planted for shelter trees, as they often are. Nearly all my wind-breaks are composed of Cupressus or Austrian Pine trees, various shrubs, behind them in the original hedges, composing the lower shelter. Since making the examination I have found three aphides in the Plum Orchard, each between two fruit buds, touching each other. All three were dead, probably having been killed by the recent frosts. Over a hundred double buds on a dozen trees were examined in finding the three insects, which were all on one tree. In many cases one bud out of a couple was broken off accidentally in the search. In a younger orchard five dead aphides between couples of fruit buds have been found in a more prolonged search than was made in the older orchard. Further hunts will have been carried out before these notes are published, and I may have something to say presently on the results forthcoming. *Southern Grower.*

CONFESSIONS OF A NOVICE—VIII.

PRECOCIOUS spring has had a severe snub, and the early-flowering plants are now hidden beneath a foot of snow. Although the frost has not been severe here in the south, gardens are like to suffer. Chief among the ill-effects of the heavy snowfall, so far as the gardener is concerned, is the probability of a belated seed-time. The soil of the garden was still on the wet side when the snow began to fall, and some weeks must elapse before the ground is ready for seed-sowing. It will be interesting to see whether the seed already sown is affected or not. The protection of the snow will doubtless screen the seed from frost, but the excessive wetness of the soil may cause the young seedlings to rot. It is to be feared that autumn-sown Peas, which had been tempted by the warmth of January to begin to grow, will presently rot off at the collar. This prospect is particularly annoying for me, since I had planned and begun to put into execution a fairly elaborate experiment, the object of which was to determine the difference of earliness between autumn and spring-sown Peas of known early varieties. In previous years my experience has pointed to the conclusion that autumn-sown Peas give a poorer crop, and are little, if at all earlier, than those sown in spring. I know that this is not in conformity with many more experienced gardeners. Yet so for a number of years it

has appeared to me. The soil in which I grow—or attempt to grow—the autumn-sown Peas is light and well-drained, and yet it nearly always happens that the Peas which have been in the ground in the winter show signs of distress in the spring. Moderately low temperature, 7° to 8° of frost, does not seem to affect them adversely; but they suffer, apparently, from two causes. One is the wetness of the soil, which causes the seedlings to go off at the collar; the other is the occasional, strong south-westerly wind which, although it be not cold, nips the plant at the ground level, so that it withers and dies.

I have adopted sundry expedients to prevent the damage from excessive wet, sowing, for example, on ridges raised at the bottom of a fairly deep furrow; but even in the most successful years, when practically all my winter-sown Peas have survived, I have never been satisfied that the crop they yielded was either earlier or so large as that provided by similar varieties sown early in spring. I wish that someone of ripe experience would tell me that I am wrong, and show me how to succeed. In the meantime, I am inclined to think that the roots of Peas are somewhat delicate things, requiring neither too much nor too little water.

I have always had a penchant for trying "fool's" experiments, as Darwin used to call those experiments which prim minds would never entertain, and this year the experiment of that sort which I undertook was that of sowing Mustard at the end of January on a part of the kitchen garden reserved for late crops. The gardener did not like it, and urged that to sow the seed in 6in. drills would be a long job. So we compromised, and it was raked in deeply. Not without some satisfaction did he point out to me a few days later that the birds had been at it; and, sure enough, they had, although, thanks to the thick sowing, they could not have taken it all. This depredation was a surprise to me, for I thought that one great advantage of Mustard over Vetches as a crop for green manuring was that birds, though they took the Vetch seed, left the Mustard alone. I saw a striking example of this last autumn at Wisley. Half of one patch in the vegetable quarters was sown with Mustard and the other half with (I think) Vetches. The seed of the Vetch was taken, and that of the Mustard left. So much so that later in the year the Vetch half was bare and the Mustard half covered with a fine stand of plant, which was subsequently dug in. Perhaps the birds took the Mustard in winter for medicinal purposes!

Whether the remains of my winter-sown Mustard seed will grow, and whether it will give me a crop worth the digging in, remains to be seen; but I cannot but think that those knowledgeable in such matters might set to work to discover a hardy, damp-resistant, quick-growing, potash-collecting, bird-repelling weed, which might be sown in our kitchen gardens in late autumn and dug in as green manure in the spring. The trouble, of course, is that in spring there is so much to do.

The fertilising value of snow is a theme on which I have heard not a few good gardeners descant, and I am no longer young enough to dismiss their views merely because I cannot explain them. May it not be possible that as the inner surface of the snow mantle melts the water finds its way into the depths of the soil, and, held there by surface tension of the particles, forms a great reservoir of available water for the growth of plants in spring and summer? The text-books tell us that the great Russian wheat fields of the south owe their fertility to the snow, which covers them for all the winter months, and that these snows supply all the water for the growing period. Rain is rough and much is wasted; but the water from melting snow is pervasive, and wets the soil for a great depth! *A. N.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

HARDINESS OF PRIMULA MALACOIDES.—The statement by R. F. G. at the end of his entertaining note on *Primula malacoides* on p. 119 is hardly correct. I have had half-a-dozen plants growing in 5-inch pots for nine months, and they are perfectly satisfactory, as also are similar plants in other gardens with which I am acquainted. I am of the opinion that if the plants "go wrong at the base immediately" they are placed in pots larger than 4 inches, this must be due to some cultural error: either potting too deeply, or, as is more probable, over-watering. As to the hardness of this plant, I recently saw a few specimens in a flower border near Sandwich, but they were "sere and yellow in the leaf," and I expect the wet snow of the past week, when the daily press reported that there were 2 feet of snow in Sandwich, has put them out of their misery. There is a fairly widespread impression that *P. malacoides* will cause skin irritation, but I cannot find any reliable instance, and imagine that it must be due to confusing the species with *Primula obconica*. *A. C. Bartlett.*

THE PROLIFICACY OF LEEKS.—In an odd corner, some overlooked Leeks produced flower, some pink and some white. In November, the weight of the seed capsules bent down the heads till they rested on the wet soil. One plant in particular attracted my attention, as a shock of green hair-like growths was sprouting from the heads of the seed capsules. On examining it, I found that a mass of bulbils had formed at the junction of the stem and the foot-stalks of the capsules, from which this hair-like growth was springing, while from the capsules themselves still smaller bulbils were sprouting and falling out. Finally, the plant had reproduced itself at the root by quite a number of strong young ones. These were taken up and planted in the usual way, and are now nice large specimens. The heads of bulbils and seed pods were placed in a box of damp grit in a cold house, so that their growth could be watched, and now—February 25—there are thousands of young plants in all stages of growth, from the merest babes to fine strong ones about 8-10 inches high, ready to plant out when weather permits. This wonderful fertility of Leeks may be well known, but it was new to me, and in these days, when time and labour must be saved, it is a great gain to leave a few plants *in situ* to reproduce themselves thus early. In the specimens where this proliferation occurred the stems were still green, and also the foot-stalks of the seed-capsules. *Western Wight.*

FROST AND THE PLANTS' AWAKENING.—It is not improbable that many readers of the *Gardeners' Chronicle* may find some difficulty in sharing with A. J. P. the satisfaction he seems to find in the doctrine of mnemics which he puts forward to explain the response of plants to seasonal changes. The fact is that the mnemics hypothesis affords, and can afford, no explanation at all. It is merely a pseudo-psychological way of rather crudely describing, in a not very accurate fashion, what actually happens. Even if it could be proved that plants have "memory" at all, it is difficult to suppose that such a quality would present a real parallel with that exhibited by creatures possessed of a specialised nervous system. And even if it could be proved, we should still be no nearer the goal of an explanation. The attempt to explain a phenomenon in terms of psychology is really to avoid explanation altogether, and even in ourselves we have no clear idea as to what memory is, though we are sure that it is dependent on the physical stuff of which the nervous system is composed. Experience shows the only path towards the interpretation of these things which has up to the present time been useful to follow, lies in the region of chemistry and physics. We only delude ourselves and go astray in following will-o'-the-wisps such as mnemics and all other such intangible hypotheses. Of course, we cannot explain most things at present—they are too complicated—but we are making some headway on the lines just indicated. We are

beginning to realise that species do differ in chemical properties, and, to take *A. A. P.*'s example, there is no reason to suppose that the English and Siberian Crabs would do otherwise than exhibit different responses to identical temperature stimuli, at any rate within certain limits. What is wanted is a careful and systematic accumulation of *facts*, such as those contributed by Mr. Brotherston in his interesting letter on this subject. It is already known, for example, that temperature plays a considerable part in leading to alteration in the chemical composition of the reserves of food stored up in hibernating organs, and that the substances thus produced start other changes, the exact sequence or nature of which is influenced by physical conditions. It is in the study of these

rather contradictory statements are, however, made. Let me quote: "The fruit and market garden holding is recognised as being, on the whole, most suitable for *men with little or no previous experience of agriculture*: (a) it can be made to produce a larger return per acre than other types of cultivation." Well, if this means anything, it certainly means that the men who secure the greatest return per acre *need the least experience*. The natural inference, therefore, is that at a time when the necessity for increased home production of food supplies is being preached throughout the length and breadth of the land, the bulk of the land ought to be given over to fruit and market gardening—in other words, to horticulture. Now let us turn to the recommendations under the heading of

vigorously preached it is necessary to say that in this country we have horticulturists quite capable of directing fruit and market gardening colonies for considerably less than £500 a year and house. Unless further information is given on the salary question, the public generally, and horticulturists in particular, will be forced to the conclusion that the scheme will be more successful in providing "golden billets" for agriculturists than profitable settlements for sailors and soldiers. *Horticulturist*.

PRIMULA MALACOIDES AS A CUT FLOWER.—

I do not know whether attention has been directed to the wonderful lasting qualities of cut flowers of this *Primula*. A bunch of a particularly good form was given me nearly a month

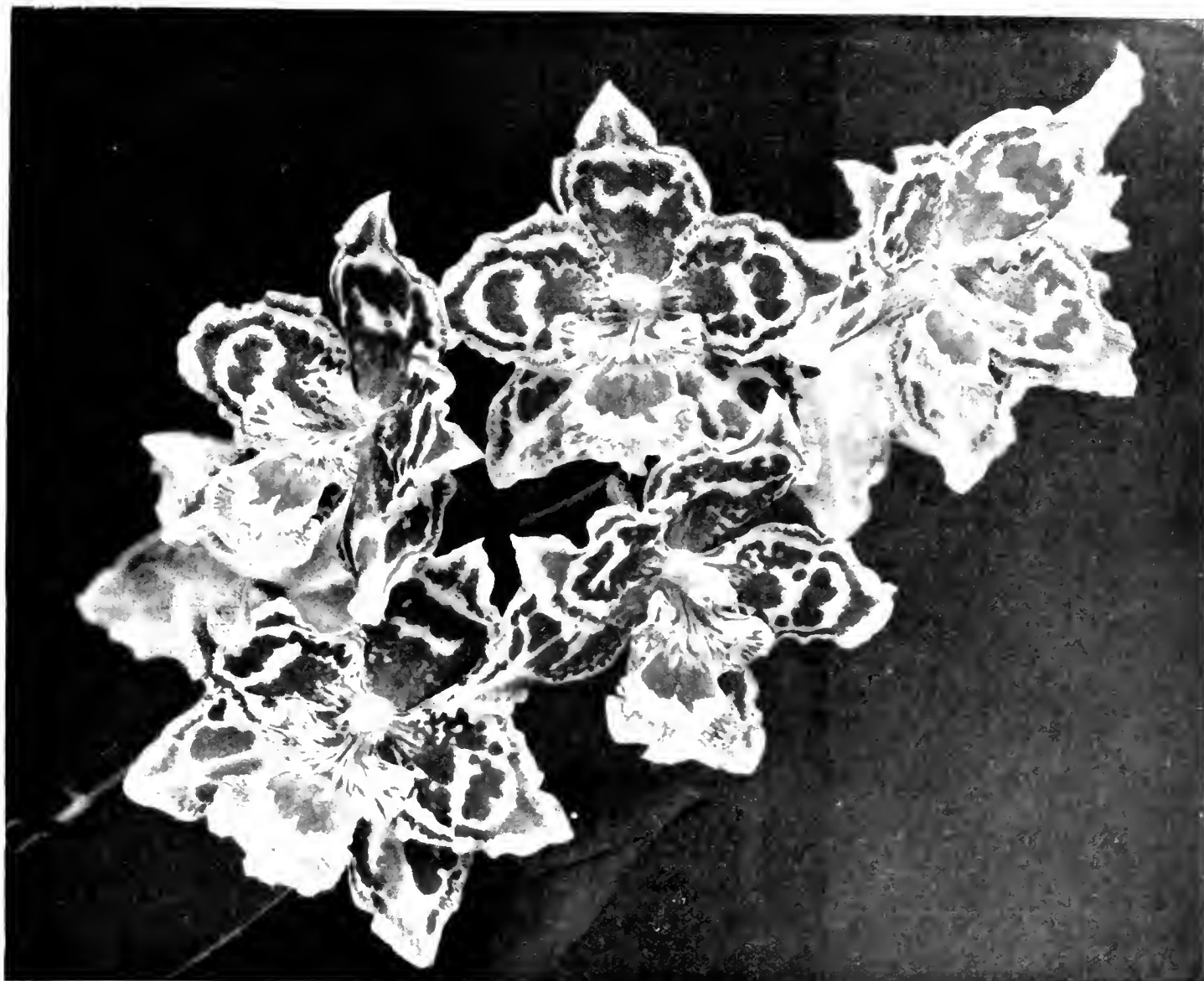


FIG. 56.—ODONTODIA JOAN FOWLER'S VARIETY.
(See Awards by the Orchid Committee, p. 150.)

Photograph by C. W. Cole.

reactions that the promise of progress lies. *J. B. F.*

LAND SETTLEMENT FOR SAILORS AND SOLDIERS.—In connection with the above subject, the recommendations of the Committee appointed to inquire into the matter are extremely interesting. The scheme outlined seems to be admirable in many respects, and, although it has met with a good deal of criticism, I am convinced that by adopting the "colony system" and providing business organisation and co-operative marketing the whole scheme will make a strong bid for success, provided the cultural work is well done. I say this after having given such matters much thought during the last few years, and after having had considerable experience of the waste going on through lack of co-operation. In connection with "Types of Holdings," some

"Provision of Expert Guidance." Here it is recommended that there should be a resident director at a salary of £500 a year, with house, and, in the case of a fruit or market garden colony, a horticultural instructor at £120 a year, with house. A good deal of further information is necessary in regard to this great disparity of salary, for it must be remembered that the success of the whole scheme will depend upon the work of the horticulturist. No matter how good the business organisation may be, unless the land is made to yield the fullest possible return the whole scheme is doomed to failure; yet the man upon whose shoulders will fall this responsibility is to receive less than one-fourth of the salary of the director. There is certainly a good deal of explanation needed in regard to this point, and at a time when economy is being

ago, and was placed in a vase in the living-room, so that the colour of the flowers just appeared between the bronzy leaves of a branch of a *Berberis*. To-day the flowers are as fresh as when they were put in the vase. I should add that the room is lit by electric light, comfortably warm, and generally in evening thick with tobacco smoke. *A., March 8, 1916.*

*** **NEW POSTAL RATES.**—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of $\frac{1}{2}$ d. every two ounces.

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 7.—The wintry weather which prevailed on Tuesday last had an unfavourable effect on the fortnightly show. Many exhibitors were forced at the last moment to cancel their entries, and only the most intrepid visitors braved the elements in order to put in an appearance. There were fewer entries in all sections than is usual at a March meeting.

The Orchid Committee recommended one First-Class Certificate, and two Awards of Merit to new varieties, as well as four medals to collections.

The Floral Committee made no award to a novelty, and in this section the medals for groups numbered only fourteen, the highest award being the Silver Banksian Medal.

The Narcissus Committee sat for the first time this season, and awarded three medals to collections.

Mr. AMOS PERRY, Enfield, brought fine plants of his grandiflorum type of *Shortia uniflora*, including several seedlings of merit, intended for the adjudication of the Committee for award. We much regret that, owing to an accident in transit, through the horse slipping on the frosty road, the plants arrived after the Committee had risen. The finest of the novelties were Amos Perry, a big bloom, of regular shape, and pale, clear rose in colour; and superba, deep rose-pink.

GROUPS.

Silver Banksian Medals were awarded to Messrs. BARR AND SONS, King Street, Covent Garden, for hardy flowers, including a number of bulbous plants. This was a dainty and pleasing exhibit, the use of dwarf Japanese Conifers as a background serving admirably the purpose to which they were appointed. The flowers included the beautiful Gladstone variety of *Crocus vernus*, charming little plants of *Narcissus minimus*, and the fine *Saxifragas oppositifolia* major and *Bursleriana*

Roses. The beautiful crimson single variety Queen Mary, bordered by a row of the white dwarf Polyantha Rose Jeanne d'Arc, occupied the centre of the group, and on either side were masses of Mme. Edouard Herriot and the silvery-pink H.T. variety Mrs. George Norwood. Miscellaneous blooms in boxes were arranged along the front, and gave a finish to the display. Mr. GEORGE PRINCE, Oxford, for Roses, the best varieties being Mrs. W. J. Grant, a climbing Rose, with blooms of glowing pink, George Dickson, rich crimson maroon, and the white climbing Niphetos. Messrs. WATERER, SONS AND CRISP, LTD., Bagshot, for a rockery planted with Alpines, of easy and natural design. Among many other choice plants were *Anemone blanda*, *A. Pulsatilla alba*, *Narcissus cyclamineus*, *Saxifraga scardica obtusa*, and *Chionodoxa gigantea*. Messrs. R. F. FELTON AND SONS, LTD., Hanover Square, London, for a decorative florist's exhibit. The subjects employed included *Genista monosperma*, *Grevillea angustifolia*, *Eucalyptus longifolia*, *E. resinifera*, blue and white specimens of *Hydrangea hortensis*, and Richmond Roses. Perhaps the most beautiful of the plants used was the Broom, the stems of which were thickly covered with the white flowers in their chestnut-red calyces. The slender, arching shoots were most artistically arranged, and gave the impression of cascades of white foam.

Bronze Banksian Medals to Messrs. STUART LOW AND CO., Enfield, for Carnations, Acacias, Cyclamens, *Eriostemon linearis*, and other greenhouse flowers. Mr. MAURICE PRICHARD, Christchurch, for hardy flowers; Messrs. J. CHEAL AND SONS, Crawley, Sussex, for Japanese Maples and flowering trees, including *Prunus subhirtella* and *P. microlepis*, the former with flowers like those of the dwarf Almond, and the other white, like a small Cherry, and a collection of *Cydonia japonica*, of which the best were *mosa* and *Euphrosyne*, white; Messrs. ALLWOOD BROS., Wivelsfield, for Carnations; Miss DIXON, Edenbridge, for Auriculas and Primroses; Mr. G. REUTHE, Keston, Kent, for hardy plants; and Messrs. WHITELEGG AND PAGE, Chislehurst, for Alpines.

Orchid Committee.

Present: Mr. J. Gurney Fowler (in the chair), Sir Jeremiah Colman, Bart., Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. sec.), W. Bolton, R. Brooman White, Stuart Low, Gurney Wilson, T. Armstrong, J. Charlesworth, J. Cypher, W. H. Hatcher, S. W. Flory, and C. Cookson.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum The Czar (parentage unrecorded) (see fig. 57) from Messrs. CHARLESWORTH AND CO., Haywards Heath. This grand *Odontoglossum* is one of the finest dark forms yet shown, the flowers being of the largest size, of fine shape, and of extraordinary substance. The sepals and petals are rich claret-red, or deep Mulberry-red, the narrow fringed margins being white and the bases showing one or two pure white markings. The lip is white, with a rich claret-coloured blotch in front of the yellow crest. The peculiar glowing hue of the dark tints of the flower suggest *O. Vuylstekei* as one of the ancestors.

AWARDS OF MERIT.

Odontioda Joan Fowler's variety (see fig. 56) (*Oda. Charlesworthii* × *Odm. ardentissimum*), from J. GURNEY FOWLER, Esq., Brackenhurst, Penbury, Tunbridge Wells. The original form for which Messrs. Charlesworth and Co. obtained an Award of Merit on April 15, 1914, was entirely dark red in colour, and since that time several variations in colour have been recorded, but none so remarkable as the one under notice, which has a clear Cowslip-yellow ground colour blotched in the most attractive manner with Chestnut-red, the central parts of the segments having large, irregular blotches, around which is a band of the same colour inside the yellow margin. The broad labellum has a red base and yellow crest, with a rayed band of red on the front portion.

Cymbidium Alexanderi Excelsior (insigne × *burneo-Lowianum*) from Messrs. J. and J. McBEAN, Cooksbridge. A remarkable development of the rose-tinted section of their strain of



FIG. 57.—*ODONTOGLOSSUM THE CZAR*.
(See Awards by the Orchid Committee.)

The Fruit and Vegetable Committee made no award of any nature.

At the 3 o'clock meeting in the lecture room, Dr. HORNE delivered an address on "Plant Diseases."

Floral Committee.

Present: Mr. H. B. May (in the chair), Messrs. W. Bain, W. A. Bilney, G. Reuthe, W. G. Baker, John Heal, C. R. Fielder, J. Dickson, J. Dixon, A. Turner, H. Cowley, Chas. E. Pearson, W. P. Thomson, E. H. Jenkins, J. F. McLeod, Sydney Morris, R. W. Wallace, and W. J. Bean.

NOVELTIES.

Messrs. BEES, LTD., Liverpool, showed *Iso-pyrum grandiflorum* (see fig. 32, p. 77), a small plant from China, with sepals about 2½ inches high, bearing lilac-coloured flowers, about ½ inch wide, and somewhat like those of *Anemone nemerosa*. The small, compact tuft of compound leaves, each not more than 1 inch long, reminded us of a *Corydalis*.

major. To Messrs. JAMES CARTER AND CO., Raynes Park, for *Cyclamen latifolium* in rows of named varieties. This collection served to demonstrate the advance that has been made in the development of this popular greenhouse flower, not only in the direction of a wide range of colours, but also in the variegation of the leaves. One of the varieties shown was St. George, a very fine plant in excellent condition. The variety formed the subject of a coloured plate which was issued as a supplementary illustration to the *Gardeners' Chronicle* on December 20, 1913; it gained the R.H.S. Award of Merit mainly for its decorative foliage. Other notable varieties were Queen Mary, Crimson Queen, Charming Bride (white), and Brilliant. Messrs. W. CUTBUSH AND SON, Highgate, for Carnations, Alpine plants and forced shrubs. One of the most pleasing of the Carnations was Mrs. Lucy Mackinnon, a well-formed, fragrant flower, of intense red colour. Mr. ELISHA J. HICKS, Twyford, Berkshire, for

C. Alexanderi, which ranges from white and yellow to rosy-lilac. The large flowers of the variety Excelsior had the sepals and petals tinged with rose and lined with a darker shade of the same colour. The lip had a spotted band of ruby-red colour in front, and some rose-coloured markings on the side lobes.

OTHER EXHIBITS.

SIR JEREMIAN COLMAN, Bart., Gatton Park, Surrey (gr. Mr. J. Collier), showed some beautiful Dendrobiums, including three D. chesingtonense, of bright yellow colour, with maroon centre to the lip, the Gatton Park variety being the largest and darkest; D. Enryalus rubens elegans, D. Wiganianum Gatton Park variety, and D. viridescens. Rare species were shown in Luisia cantharoides, with clusters of small, insect-like flowers; Coelia macrostachya, and Acanthophippium sylhetense.

J. GURNEY FOWLER, Esq., Brackenhurst, Pembury, showed Cattleya Trianae Amesiana, a well-known and still very distinct pure white form, with a delicate blush-pink front to the lip.

Messrs. CHARLESWORTH AND CO., Haywards Heath, staged a group of splendidly grown hybrids, the Odontoglossums being remarkably choice. There were also twelve specimens of O. crispum xanthites, with pure-white flowers, having an occasional lemon-yellow spot, some finely blotched O. crispum and elegant hybrids being arranged with them, and brightened by scarlet Odontiodas, hybrid Cattleyas, and Sophro-Laelio-Cattleya Marathon, Cattleya Trianae Grand Monarch, which obtained a First-Class Certificate in 1909. (Silver Flora Medal.)

Messrs. SANDER AND SONS, St. Albans, staged a large group, with well-flowered Dendrobium Wardianum and tall Cymbidiums at the back. Among these were three distinct forms of doubtful derivation imported with C. insignis and named C. Cooperi, C. roseum and C. Mavis, all differing in colour, and presumably natural hybrids. Among white Cattleyas were C. Mulleri (Myra Peeters x intermedia alba), C. Magali Sander, and C. Suzanne Hye de Crom. A great variety of Odontoglossums and Odontiodas were in the group, and among the species Trichopilia suavis, Sarcocylus Fitzgeraldii, Sophronitis violacea, and various Bulbophyllums, (Silver Flora Medal.)

Messrs. J. CYPHER AND SONS, Cheltenham, had a good and well-arranged group, with Dendrobium Wardianum and forms of D. noble at the back. Cypripediums, Cymbidiums, and Odontoglossums were well represented, and, as being specially good, were noted Sophronitis grandiflora with many rich scarlet flowers, Cirrhopetalum picturatum with quaint-looking umbels of prettily marked flowers, the elegant Angraecum citratum, the orange-scarlet Ada amantissima, and good Masdevallias. (Silver Banksian Medal.)

Messrs. J. and J. McBEAN, Cooksbridge, staged a good group, in which their hybrid Cymbidiums and red Odontiodas were features. Two good Laelio-Cattleya Beatrice, the yellow L.C. Myra, good Odontoglossum Gladys, and O. amabile were also included. (Silver Banksian Medal.)

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed a selection of good hybrids, the best of which were the new Odontioda Verdun (Oda. Charlesworthii x Odm. Armstrongiae), the small plant bearing a flower of large size and fine substance, dark claret in colour, with a ruby-red shade, the lip being white in front; and the new Cypripedium Ardens (glaucophyllum x Miss Louisa Fowler), a pretty flower, with pale green base and white upper part to the dorsal sepal, which has purple dotted lines, the petals and lip tinged with rose; some fine hybrid Dendrobiums, yellow Laelio-Cattleyas, and Cypripedium Holdenii were also noted.

Messrs. FLORY AND BLACK, Slough, showed various hybrids, including two of their new Brasso-Laelio-Cattleya Hilda (B.L. Digbyana-purpurata x C. labiata), a clear rose-coloured flower, with sulphur-yellow disc to the lip; Zygo-Cala Veitchii; a fine dark blotched Odontoglossum Lambeauiana, and some species.

Mr. HARRY DIXON, Spencer Park, Wandsworth Common, staged a neat group of Cymbidiums, Lycastes, and Odontiodas.

Messrs. STUART LOW AND CO., Jarvisbrook,

Sussex, sent Laelio-Cattleya labiosa Illuminator, reddish-rose, with a dark lip.

Messrs. HASSALL AND CO., Southgate, showed Cymbidium Holfordianum, a pretty light form of Lycaste Skinneri, and Cattleya Suzanne Hye de Crom.

Narcissus Committee.

Present: Mr. E. A. Bowles (in the chair), Messrs. Joseph Jacob, Peter R. Barr, F. Herbert Chapman, G. W. Leak, and Chas. H. Curtis.

The following medals were awarded for collections:—

Silver Gift Flora Medal to Messrs. R. and G. CUTBERT, Southgate, for a large group of Tulips in pots. This collection formed the showiest group exhibit; the plants carried numerous fine blooms, the varieties being well arranged for colour effect.

Silver Gift Banksian Medals to Messrs. R. H. BATH, Ltd., Wisbech, for bulbous flowers, including Narcissus, Tulips, Hyacinths, and Fritillaries, in bowls of moss fibre. Amongst the most effective bowls were those of the pale blue Tulip William Copeland, which formed the subject of the coloured plate in our issue for November 7, 1914. Other subjects suitable for this method of growing bulbs were Narcissi Emperor and princeps, Hyacinth Queen of the Blues, and Tulip Rose of Holland. Messrs. BARR AND SONS, King Street, Covent Garden, for Daffodils. Novelties included an unnamed seedling Trumpet variety, the large tube was rich yellow, the white perianth suffused with gold colour at the base; Briar, with deep yellow trumpet, Amynta, a bicolor, the well-formed trumpet being deep cream, the campanulate perianth having broad, pale cream segments; Yorick, a bigger flower than Briar but paler; Ptolemy, a giant bicolor, with fine shaped trumpet of lemon yellow.

Fruit and Vegetable Committee.

There was nothing before this Committee. The following members were present: Mr. Owen Thomas (in the chair), Messrs. W. Bates, E. Beckett, E. A. Bunyard, J. Harrison, P. T. Tucker, and A. R. Allan.

DEBATING SOCIETIES

NEWPORT GARDENERS.—The Newport and District Gardeners' Mutual Improvement Association held its sixth annual outdoor competition at the Fair Oak Nurseries, Bassaleg, on Wednesday, February 23. The competition took the form of a tree-planting contest, and despite the cold weather there was a good muster of competitors. The work was good, all the men performing very creditably. Mr. G. Seades, chairman of the Association, presided, there being also present, among others, Messrs. Munro (Tton Court, Chepstow), J. Basham, jun. (St. Fagans), J. Duff (Brynglas) (judges), and Mr. Walter Jenkins (hon. secretary). The points taken into account were making the hole, pruning the roots, staking, planting, and pruning the head of the tree. The weakest point of the competition was the pruning. The prize-winners were: (1) Messrs. D. Seades and S. Willis (tied with a possible 25 points each); (2) Messrs. E. Brown and W. Standerwick (each 24 points); (3) Mr. Joe Harris (23 points).

Obituary.

F. G. DREW.—We have to state with deep regret that just as these pages are going to press the news reaches us of the death of Mr. F. G. Drew, superintendent of the Horticultural Department, University College, Reading. The death occurred on Wednesday, the 8th inst.

W. LANE.—We deeply regret to record the death of Mr. W. Lane, King's Ride, Ascot, who passed away after a short illness on March 2, aged sixty-five years. Mr. Lane held the posts of gardener and bailiff to the late Sir Edward and the present Lady Durning Lawrence for the past thirty-six years. Nearly the whole of the extensive gardens and pleasure grounds at King's Ride were planned and formed under his supervision. Many friends attended the funeral service at South Ascot Church on the 6th inst.

JOHN BROWN WEEKS.—The American horticultural press records the death of Mr. John Brown Weeks, florist and seedsman, at Irving Park, Chicago, on February 9, aged 84 years. He was a native of Chertsey, Surrey, and settled in U.S.A. more than sixty years ago.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending March 8.
The ground entered with snow 4½ inches deep. This was a very cold week for the time of year. There was not a single unseasonably warm day or night, whilst the days were, as a rule, more unseasonably cold than the nights. On the coldest day the temperature in the thermometer screen did not rise higher than 37°, and on the coldest night the exposed thermometer registered 15° of frost. The ground is at the present time 5° colder at 1 foot deep and 3° colder at 2 feet deep than is seasonable. Snow fell on three days, snow with rain on two days, and sleet on one day. The total measurement of the melted snow and soft hail and the rain amounted to three-quarters of an inch. On the morning of the 3rd inst. the ground was covered with snow to the average depth of three-quarters of an inch, on the evening of the 6th to the depth of 2 inches, and on the 7th to the depth of 3 inches, and on the 8th to the average depth of 4½ inches; with two exceptions this was the deepest fall of snow recorded here in March during the thirty years over which my records at Berkhamsted extend. During the week 3½ gallons of melted snow and rain came through both of my percolation-gauges. The sun shone on an average for 2 hours 48 minutes a day, which is 48 minutes a day short of the mean daily duration in March. Light airs and calms alone prevailed during the week. The mean amount of moisture in the air at three o'clock in the afternoon exceeded a seasonable quantity for that hour by 8 per cent. E. M.

FEBRUARY.

Seasonable in temperature and remarkably wet. Snow nine inches deep.—The first nineteen days and nights were, with two exceptions, warm for the time of year, but after that a change to cold weather took place, which lasted till the end of the month. On the warmest day the highest temperature in the thermometer-screen was 53 degrees and on the coldest night the exposed thermometer registered 13 degrees of frost. The latter reading is, with four exceptions, the highest extreme minimum temperature I have yet recorded here in February during the 30 years over which my records at Berkhamsted extend. Rain fell on fourteen days, rain and snow on one day, and snow on seven days. The total measurement of melted snow and rain amounted to 4½ inches, making this, with three exceptions, the wettest February, recorded at Berkhamsted for sixty years. On the 26th the ground was covered with snow to the depth of nine inches, which is, with one exception (1900), deeper than in any previous February of which I have here any record. The sun shone, on an average, for 2 hours 39 minutes a day, or 19 minutes a day longer than is usual in February. The wind was, as a rule, light, except during the last eleven days, and in the windiest hour reached 37 miles, direction west, which is, with one exception, the highest velocity recorded here for, at all events, the last 30 years. The mean amount of moisture in the air at 3 p.m. fell short of a seasonable quantity for that hour by one per cent.

THE WINTER OF 1915-16.

Remarkably mild and very wet.—This was, with one exception, the mildest winter in the 29 years over which my records at Berkhamsted extend. It was also the seventh mild winter we have had in succession. Taken as a whole, both December and January proved very mild, while February, on the other hand, was of about average temperature. On the warmest day the temperature in the thermometer-screen rose to 57°, which is, with three exceptions, the highest reading yet recorded here during the winter months. On the coldest night the exposed thermometer registered 15° of frost, which is also a very high extreme minimum reading for the season. The total rainfall amounted to 11½ inches, which is as much as 4½ inches in excess of the winter average. December and February were very wet, while January proved dry. Snow fell on eight days, and on one day in February the ground was covered to the depth of nine inches. The sun shone, on an average, for 1 hour 55 minutes a day, which is 13 minutes a day in excess of the average daily duration for the season.

Underground water supply.—Since the winter half of the present drainage year began in October last the total rainfall has been 16½ inches, which is three inches in excess of the average for the same five months in the previous sixty years—equivalent to an excess of rainfall on each acre in this district of 69,540 gallons. At the same time last year there was an excess of 186,631 gallons per acre. E. M.

THE WEATHER IN SCOTLAND.

February was dull and cold, with frequent showers of sleet and snow. Rain or snow fell on 19 days, yielding a total fall of 2.56 inches; the heaviest fall of 0.58 inch was recorded on the 6th. Of sunshine we had a total of 81.2 hours, being 27 per cent. of the possible; there were eight sunless days, while the brightest day was the 19th, with 8.1 hours. During the month the barometer varied from 28.431 inches on the 16th to 30.481 inches on the 23rd, with a mean of 29.701. The mean temperature was 35.5°, with a mean maximum of 41° and a mean minimum of 32°, giving a mean range of 9°. On the 1st the highest maximum of 47° was registered, and on the 8th and 18th the lowest maximum of 36°. The highest minimum of 41° was on the 2nd, and the lowest minimum of 25° on the 20th. Thus for the month we had an absolute range of 22°. On 11 days the temperature fell below the freezing point, and on 19 days there was ground frost, the lowest grass temperature registered being 20°. At 1 foot deep the soil thermometer fell from 40° to 35°. The prevailing winds, which were never strong, were westerly. James Mulloch, Director of Studies, St. Andrews Training College Gardens, Kirkton of Mains, near Dundee.

ANSWERS TO CORRESPONDENTS.

BOOKS: *Lady Gardener*. There are several good works on trees and shrubs; the best is *Trees and Shrubs Hardy in the British Isles*, by W. J. Benn, the price of which is £2 3s., post free. A less expensive book is *Beautiful*

billets being placed in the interior of the pile; over the whole is laid a covering of turf or of charcoal dust and soil. The combustion of the wood is conducted from above downwards, and from the exterior towards the centre, so that the charcoal in a half-burnt heap forms an inverted cone. At the sides of the heap are holes for the admission of air, the number

acid. When the airholes of the burning heap no longer emit smoke and flame they are carefully stopped, and the pile allowed to cool for two or three days. The charcoal is then drawn, and any pieces which may be still glowing are quenched by plunging them into water or sand. By this method 128 cubic feet of wood yield about 30 bushels of charcoal. Peat charcoal is produced by the carbonisation of peat in kilns or circular shafts of brick and stone-work. The ignition proceeds from above downwards. Animal charcoal is produced by igniting fresh and coarsely comminuted bones, which have been previously boiled to remove fat, in closed vessels of iron or earthenware. The charcoal so produced, which weighs about half as much as the bones employed, is hermetically sealed, as soon as made, in iron canisters. Animal charcoal makes a good manure.

CYPRIPEDIUM UNHEALTHY: *Cyp.* No organic disease is present. The decay is caused by too much moisture in the rooting compost, which prevents the access of air to the roots.

NAME OF FRUIT: J. W. M. Apple Newton Wonder.

NAMES OF PLANTS: *T. H.* 1, *Nephrolepis exaltata* and variety *Fosteri*; 2, *Nephrolepis lycopodioides*; 3, *Nephrolepis tuberosa*; 4, *Oncidium japonicum*; 5, *Davallia Tyermannii*; 6, *Periploca graeca*.

NAMES USED IN "GLEANINGS FROM FRENCH GARDENS": *W. K.* *Owenia* is a genus belonging to the Natural Order *Meliaceae*. There are six or more known species, all being natives of Australia. *Undea bipinnatifida* is an erroneous name for *Montanoa bipinnatifida* (see fig. 59); this plant is a member of the large Order of *Compositae*, and is a native of Mexico. It grows 6 to 8 feet in height, and produces yellow flower-heads. Owing to its handsome pinnatifid leaves, the plant is largely used for ornament in sub-tropical gardens. It is not hardy in most districts in Great Britain, and can be grown out of doors only during the summer. Propagation can be effected by means of seeds sown in gentle bottom heat in the spring; or by cuttings of the roots inserted in autumn; or cuttings of the stems, which latter should be rooted in the spring in a close, heated frame.

SWEET POTATO: *A. J. L.* This is a product of the tropics, of which the botanical name is *Ipomoea Batatas*. We append the following account of its culture from the pages of *A Handbook of Tropical Gardening*, by H. F. Macmillan, the Director of the Ceylon Botanic Gardens: "A creeping or trailing perennial, bearing succulent, tuberous roots, which are a tasty and nutritious article of food, being sometimes preferred by Europeans to the common or Irish Potato. The Sweet Potato is considered to have its native habitat distributed over the tropics generally. It is cultivated in all warm countries, and may be grown successfully in sheltered valleys up to about 4,000 feet in Ceylon, but does not usually thrive in the hills. Any moderately good soil will suit the plant, provided it is of a light, sandy nature. The ground should be well dug, manured, and formed into ridges at distances of about 2 feet; along the centre of the ridges cuttings about 12 inches long are planted a few inches apart, and these readily strike root. During dry weather the plants should be watered, or, when possible, the ground irrigated once a week. The crop is ready for harvesting about 3-4 months from the time of planting, the leaves turning yellow when the tubers are mature. A yield of about four or five tons of tubers per acre may be expected under favourable conditions." From the above information you will see that the Sweet Potato cannot be grown successfully out-of-doors in temperate climates.

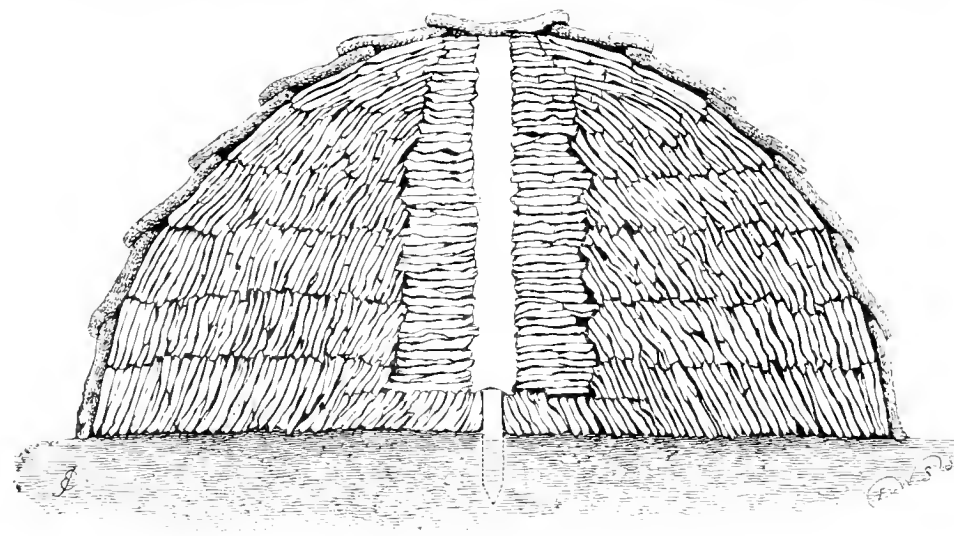


FIG. 58. SECTION OF A CHARCOAL KILN.

Flowering Trees and Shrubs, by John Weathers, price 5s. 6d., post free. Another smaller book on the same subject is *Hardy Ornamental Flowering Trees and Shrubs*, by A. D. Webster, 4s., post free. All these can be obtained from our publication department.

and size of which are a matter of importance. The first, or "sweating" process, lasts three or four days, during which the cover becomes moist with condensed water. The openings round the base of the pile are then covered, and a series of holes made about half way



FIG. 59. MONTANOA BIPINNATIFIDA.

CHARCOAL: *T. F.* In countries where wood is abundant, charcoal is produced by burning conical piles of billets of wood, about 12 feet in height and from 10 to 40 feet in diameter, the wood being set on fire from the top of a central hole or chimney. The wood is felled in winter, and must be tolerably dry; it is built up with the bark outermost, the largest

from the top of the heap; as the smoke ceases to issue from these they are closed, and other holes made below as required. The tarry products which collect towards the close of the operation are removed from the heap by means of gutters or pipes. Sometimes the base of the heap is made in the shape of a flat funnel, from which proceeds a channel for the tar and

Communications Received.—J. F.—H. E.—Linnean S.—T. H.—W. H. P.—T. L., Ireland.—A. G.—T. W. Parker.—Clematis.—J. S. E.—B. G.—B. of A.—J. A. P.—W. L.—G. D.—W. E. B.—Dr. K.—T. D. A. C., Colorado.—de B. C.—W. W. P.—H. E.—K. D. W.—F. W. E.—G. E. K.—V. O.—G. H. C.—A. C. W.

THE

Gardeners' Chronicle

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NATURE'S CYCLE IN THE SOIL.

THE second of Dr. Russell's Royal Institution lectures on "Nature's Cycle in the Soil" was delivered on the 7th inst., and dealt with "Man's Control." The following is a summary of the chief points:

Nature's cycle consists in two parts: the up grade, being the accumulation of plant residues or organic matter in the soil, and the down grade, being the decomposition of these residues with liberation of more plant food; the former causes the storage of fertility in the soil, the latter causes its liberation.

Control may take place in two directions: the amount of organic matter—i.e., the raw material out of which the plant food is made—may be increased; or the pace of the manufacturing process may be forced.

The necessity for increasing the stock of organic matter in the soil was realised very early in the history of the world. Arable farmers found that land cannot be cropped indefinitely: sooner or later it became "exhausted"; it recovered, however, if left to itself for a time, so that natural vegetation could spring up and die down again. The Mosaic law commanded the Jews to leave their land untilled for one year in seven, and not to reap "that which growth of its own accord." The system survived in our own land through Saxon and mediæval times: the land was uncropped one year in three, two corn crops were taken, then grass was allowed to grow up on the stubbles, some of which was grazed and the rest ploughed in. The principle still underlies our modern rotations: crops are grown, then the land is left covered with vegetation, but the process is regulated by sowing a definite mixture of grass and Clover

chosen to make vigorous growth, instead of leaving the matter entirely to chance.

Another method for increasing the amount of organic matter in the soil consists in growing a crop exclusively for the purpose of ploughing it in. This also goes back to ancient times: Theophrastus, 300 years before Christ, tells us that Beans were grown in Macedonia and Thessaly expressly to be ploughed in at flowering time; and Varro, about 50 B.C., states that Lupins were grown for the same purpose. This method is called "green manuring," and even to-day it is not as fully developed as it ought to be. Instead of ploughing in the crop, it may be fed to animals on the ground: there are other methods also, but the object is always the same.

The cultivator's aim, however, is not to accumulate fertility, but to use it. We must therefore turn to the other part of the cycle, and see how far the down grade can be controlled. The most obvious method is to try to control the soil organisms. This has proved a very difficult problem, and only the fringe has yet been touched. Soon after bacteriologists had picked out the organisms that cause Clover to fix nitrogen, they conceived the idea of breeding them in quantity and putting them on the seed or into the soil. It was thought that by thus reinforcing the organisms already present it would be possible to get much better Clover crops, and therefore a greater store of fertility. These hopes were disappointed. Inoculation succeeded only in one case: when a new leguminous crop was introduced it sometimes proved the more economical to add the proper strain of organisms than to wait till the native organisms had had time to adapt themselves to the new crop. This not uncommonly occurs in Canada and the United States, but it is a comparatively rare event here. The proper bacteria usually seem to be present, and little is gained by adding to their numbers, as they merely die down to the proper number the soil can carry. If one wishes to increase the number, the only way to do it is to improve the soil conditions. But even this does not settle the matter, for, as has already been shown, the soil population is very mixed, and improvements in soil conditions may benefit the whole crowd, good and bad. Indeed, under specially intense glasshouse conditions, the harmful population may prosper so much that the efficiency of the soil becomes lowered and the soil becomes "sick." The remedy is obvious: it consists in improving the soil population, and this is done by taking advantage of the fact that the harmful organisms are more easily killed than the useful ones. Steam is used successfully in glasshouses; antiseptics would be cheaper, but, in spite of considerable search, nothing has yet been found suitable for field work. The problem is still under investigation.

It is extremely difficult to light on any wholly new practice in agriculture, and partial sterilisation is no exception. Long before the dawn of history peasants were heating their soils to get increased yields. The practice is referred to in the ancient

literature of India, and by Vergil in the Georgics, and it can be seen in many countries, old and new.

More success has been attained in the efforts to control the soil conditions. Fortunately, these are the same for organisms as for plants, so that anything benefiting the one is likely to benefit the other as well. But there is one fundamental law that always holds: the plant must have every one of its requirements satisfied, or it will fail: for example, no amount of water or food makes up for lack of temperature. Anything setting a limit beyond which growth will not go is called a limiting factor. Common limiting factors in the soil are sourness, wetness, dryness, poverty and thinness of soil. In soil fertility problems the first step is always to discover the limiting factor, and then to put it out of action.

One of the commonest defects is sourness or lack of lime. From the dawn of history this had been one of the problems of the Celtic tribes, who, however, succeeded in discovering a remedy, for Pliny tells us that they drew chalk out of the earth to nourish the soil. To this day the process is still carried out in Hertfordshire much as he describes it. In modern times the use of ground lime has proved more convenient, and ground limestone sometimes even better still.

Wetness can be remedied only in one way—by drainage. This is an old art that was forgotten for a long time; it is not mentioned in the great English Agricultural Revival of the 16th century. Gervase Markham, for instance, wrote books on every branch of farming—so many, indeed, that his publishers made a contract with him to write no more—but never one on drainage. By the middle of the 17th century it was well known, though not much practised: by the middle of the 19th century, however, it was extensively carried out. Much of it wants re-doing. Pipe drainage is out of the question nowadays on any large area, but a cheap and effective substitute seems to be forthcoming in mole drainage, which consists in making tunnels through the soil about 9 to 18 inches below the surface with a special form of plough. Steam traction is usually needed, and the process only works in large fields, but it appears to be very successful.

Dryness can be overcome either by adding water, as in the big irrigation schemes, or by taking more care of the natural water supply. Addition of clay or organic matter reduces the loss of water: so also does the preservation of a fine soil mulch on the surface. Implements have been devised to produce this soil-layer. Much can be done also by selecting suitable crops or varieties: special drought-resisting Wheats have been bred in Australia, and Maize in the Western States of America. In consequence of these soil and crop improvements dryness no longer presents insuperable difficulties to cultivation.

Shallowness of soil is, however, more serious, especially when the thin soil is underlain by gravel or very coarse sand:

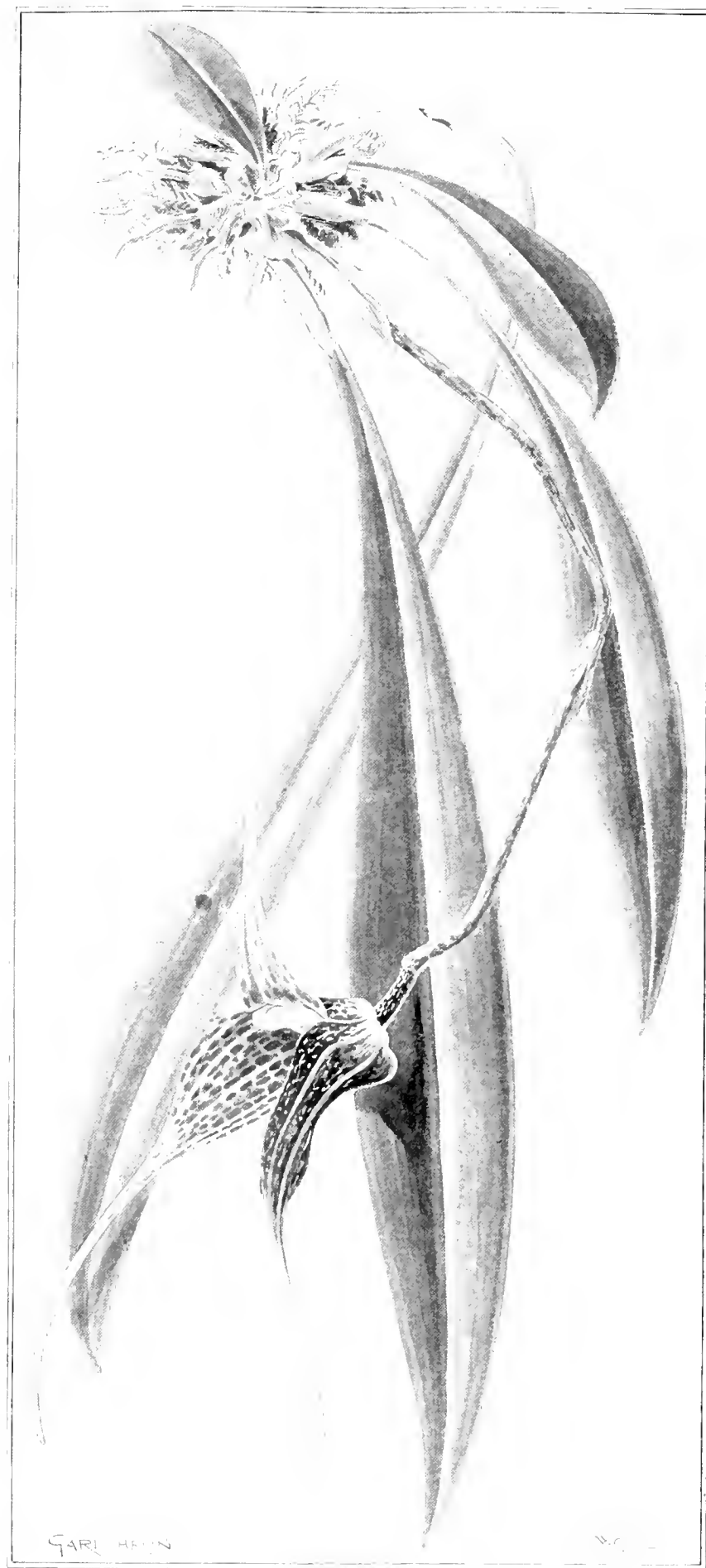


FIG. 60.—MASDEVALLIA DEORSA.

indeed, in this case no one has yet evolved any satisfactory method of treatment for crop production. Something may be done if a soft rock lies beneath, and especially if it is only a thin layer which can be removed. But when all is said and done, there remain great areas of waste land that we do not know how to deal with on our present methods.

Apart from these cases, however, a very considerable degree of control of the soil cycle is possible. The question naturally arises: how far can the process go? Not indefinitely. In any scheme of improvement we are soon brought up against the fundamental law that plants must have all their requirements fulfilled, and anything lacking sets a limit to their growth. Agricultural investigators aspire to a good deal in the way of control and improvement, but there is one thing they admit they cannot overcome—the weather. Here, then, is one limiting factor which has wrecked many schemes of soil improvement, and is likely to remain with us.

Another limiting factor is the soil type. In spite of all efforts a clay remains a clay, and a sand remains a sand. A gardener on a sandy soil may with great pains be able to grow clay-soil plants, but they will never "do" as well as if equal care were bestowed on them in their natural habitat. The farmer cannot lavish care on individual plants, but has to deal with masses. He therefore is less able to overcome the difficulties of unsuitable soil type.

All the same it is imperative that further control should be obtained. It is impossible to tell how and when human progress will be made, but all experience teaches this: that progress is most certain when it is based on a foundation of scientific principle.

ORCHID NOTES AND CLEANINGS.

ORCHIDS FROM BURFORD.

MR. E. SWINDEF, Orchid grower to Elizabeth Lady Lawrence, Burford, Dorking, sends us flowers of interesting Orchids in bloom there. They include eight handsome yellow-flowered *Dendrobiums* of the Burford crosses between *D. signatum aureum* and *D. Ainsworthii* (*D. Melpomene*). The hybrids may be divided into two classes, the lighter being primrose yellow with dark lines on the base of the lip and resembling the variety for which the late Sir Trevor Lawrence, Bart., obtained the R.H.S. First-class Certificate on March 27, 1900, the other being dark chrome yellow with, in some cases, a tinge of red, and all having a dark maroon disc to the lip.

SOPHRO-LAELIO-CATTLEYA BLETCHLEYFLORA (L.C. *bletchleyensis* × *S. grandiflora*) is one of the best medium-sized scarlet hybrids we have seen, the flowers being more than 4 inches across, and the petals $1\frac{1}{4}$ inch wide. This, and *S.-L.-C. Jeanette* (L.C. *Martinetii* × *S. grandiflora*), which is also of a clear scarlet colour, bears out the recommendation to use *S. grandiflora* on secondary hybrids, when possible, to secure the perpetuation of its colour. As a receptive agent *L. tenebrosa*, which is a factor in both of these crosses, seems a good element.

MASDEVALLIA DEORSA (see fig. 60).—A remarkable species, unlike any other in the genus. The long, grey-tinted leaves hang abruptly downward, and the yellow flowers mottled with claret colour, arch gracefully above them.

MAXILLARIA FRACTIFLEXA.—A rare and elegant species bearing numerous flowers on stems 6 inches in height: the narrow, curved sepals are 4 inches in length, coloured yellow tinged with red, the narrower and shorter hooked petals are cream-white and the small lip is white spotted with purple.

BRASSO-LAELIO-CATTLEYA LINDLEYANO-ELEGANS.—The flowers were taken from the plant which secured the R.H.S. Award of Merit on Decem-

bér 14, 1897; this specimen has borne 25 spikes with 60 flowers this season. The pseudo-bulb sent bears thick lanceolate leaves and a four-flowered inflorescence, the flowers being white, with a lilac front to the lip.

COELOGYNE SPECIOSA ALBA.—A pretty flower, in which the brown colour on the lip of the type (a flower of which is also sent) is suppressed; the lip is pale salmon colour with a white front.

NOTES ON IRISES.

I. RETICULATA × I. BAKERIANA.

TEN years ago the late Max Leichtlin sent me a single bulb of what he called *Iris Bakeriana melaina*, with a note to the effect that it was a better "doer" than *I. Bakeriana*, and that it spread fairly rapidly and formed little clusters of bulbs that flowered freely. The plant has lived up to its reputation, and I have at present a little patch bearing well over a dozen blooms. The flower is practically of the same size as that of *I. Bakeriana*, but, whereas in the latter the white ground extends from side to side of the blade of the falls above the deep velvety tip, in the hybrid it is confined to a central triangular patch, irregularly spotted with deep violet. The leaves also differ in having only six ribs, while those of *Bakeriana* have eight.

Thinking that this plant was probably of hybrid origin, I grew a few bulbs of *I. reticulata* in a pot in order to get them in bloom early in the year, and crossed them in 1910 with pollen of *I. Bakeriana*. The seedlings were comparatively easy to raise, and, curiously enough, the first to bloom flowered last spring on the same day as Leichtlin's plant, and was to all intents and purposes identical with it. This year I have had some 40 or 50 bulbs from this cross in flower, and I cannot too strongly recommend the cross to any who are interested in the reticulata group of Irises. No two bulbs have produced identical flowers, and there have been many shades, both of blue and of red-purple. The unopened buds resemble those of *I. Bakeriana* in being spotted on the outside of the haft of the falls, and not merely lined as in *I. reticulata*. In all cases the triangular white patch is present, in some cases with a central orange streak, as in *I. reticulata*, but in others without this feature, which is also absent from *I. Bakeriana*. In a few cases the colour is an intense blue, almost the blue of *Phacelia campanularia*, which I do not remember to have seen elsewhere in Irises.

The foliage is very sturdy, resembling that of *I. Bakeriana* rather than that of *I. reticulata*, and has 6, 7 or 8 ribs.

It is to be hoped that the hybrid origin of these beautiful little bulbs will give them a vigour and a constitution which will enable them to resist the attacks of the fungous disease which so frequently attacks *I. reticulata*. Those who value the latter would, I think, be well advised to lift the bulbs about every second year and pick out any that show signs of disease, wash the sound bulbs in a solution of formalin, and replant fairly soon in fresh soil. There is one precaution that must be taken, and that is to see that the bulbs are thoroughly dry before they are put into the formalin. I have heard of bulbs being killed by the treatment, but I have never lost any myself from this cause, though I can well believe that a bulb that had just come soft and moist from the soil might easily absorb the formalin too deeply.

I. RETICULATA.

Why is it that the so-called type of *I. reticulata*, the well-known violet-blue form, is, so far as I know, never obtained from seed? As the years go by I have batch after batch of seedlings from the type, almost all without exception of a

red-purple colour, and only occasionally a blue form, and then always of a lighter blue than the type. The second generation also gives red-purples, and one could wish that the specialists in Mendelism would give their attention to what seems to be an interesting and complicated case of colour-inheritance.

I. UNGUICULARIS.

In the past few months there have been several paragraphs in the horticultural Press advocating the spring, and more particularly April, as the best time at which to move this well-known winter-blooming Iris. I find that a French friend, who gardens within sight of the Mediterranean, and who can therefore use this Iris as an edging and obtain masses of flower, agrees with me in dissenting from this view, and in preferring September for the operation of transplantation. Early in that month it will be found that fresh root-fibres are beginning to push out, and they will grow rapidly in the soil, which is then much warmer than it is in April, when growth is often entirely checked by frosty nights and dry, parching winds during the day. It is true that in a moist, genial April, followed by a warm and not too dry May, transplantation



FIG. 61.—*IRIS ROSENBACHIANA*: COLOUR LILAC-PURPLE AND WHITE, CREST ORANGE.

might be attended with complete success, but my own experience has been that the plants easily suffer from drought and from the cold, dry winds.

My friend tells me that he finds that the white form comes true as to about 30 per cent. of the plants, though he does not tell me whether the plants were carefully protected from insects and pollinated with pollen of the white form only. The few plants that I have raised from the white form, when self-fertilised, have so far all been white, though it is true that the number is so small that this may be a mere chance. The variety *speciosa*, on the other hand, has, in my friend's experience, come quite true, and this confirms my own belief that this form is not Algerian but Greek. It differs structurally in having a ring of projecting knobs round the top of the perianth tube at the base of the segments of the flower. Here it never flowers till March or April, which is also the case with a minute form, which was sent to me from the island of Cephalonia.

I. ROSENBACHIANA.

The early form of this rare Iris has once more flowered magnificently when planted out in a cold frame, which enables the foliage to develop uninjured in the early months of the year, and which also makes it possible to give the bulbs

that absolute rest, warmth, and drought in summer which seem essential to their well-being. I find that I was mistaken in thinking that this species rarely produces offsets, for this year in a fair number of cases two shoots have appeared where there was only one bulb last year, and, moreover, the two shoots are equally vigorous and both produce flowers. Strong bulbs have produced three or even four flowers from a single tuft of leaves.

It seems certain that there are two distinct forms of this species, for this year again the earlier form with yellow pollen is passing out of flower just when the first of the later form with white pollen are beginning to flower, and while the stout, nipple-like points of the majority are only just appearing above the surface.

It is difficult to see any difference except in the colour of the flowers and of the pollen. Colour alone would seem scarcely to warrant a different specific name, which was, however, apparently bestowed upon it under the title of *I. baldschanica* by F. Fedtschenko in the *Journal Russe de Botanique*, 1909, p. 77. I am endeavouring this year to cross the two forms in the hope that seedlings may throw some light on their relationship. W. R. Dykes, *Charterhouse, Godalming*.

THE ROSARY.

IS THERE A SMALL WORK ON ROSE SPECIES?

IN reply to a correspondent, *G. H. E.*, I may say at once that it is difficult to find a satisfactory small modern work on species of Roses if the whole genus is included. Miss Willmott's book is, of course, ruled out both by its size and price (about £25). One of the most complete books of the kind is Regel's *Tentamen rosarum monographicum*, which embraces the genus, the descriptions of the species being in Latin, and the volume running to 114 pages. It was published at St. Petersburg in 1877; the classification he adopted is not a very convenient one, and after each species, as he understood it, he collects a number of names and references of synonyms, forms and varieties, usually without distinguishing one from the other, but sometimes specifying the varieties.

Lindley's *Rosarum monographia*, 1820, is still very useful if due regard is had to subsequent research. At the time it was written it must have been practically complete. It is usually obtainable for £2 to £5, according to its condition.

Déséglise's *Catalogue Raisonné* (Paris, 1877) is an admirable book of reference for the Roses of Europe, Africa and Asia. It does not, however, touch upon American Roses, and does not usually describe the species. Déséglise contenting himself with giving the references to authors' descriptions, and only describing some few species or varieties. The same author's *Monographie Essay on the Roses of France* contains, however, full descriptions of the French Roses, as also does MME. Burnat and Grenier's work of the *Roses of the Maritime Alps*.

For American Roses reference should be made to an excellent paper by Sereno Watson in Vol. XX. of the *Proceedings of the American Academy of Arts and Sciences*, p. 324, on "A History and Revision of the Roses of North America," which I fancy I have seen listed separately.

For British Roses there is nothing better than the three brochures on this subject by Major A. H. Wolley Dod, issued as supplements to the *Journal of Botany* for the years 1908, 1910 and 1911, and obtainable separately for two or three shillings each. They are clearly written, and the descriptions of species, varieties and forms are complete.

A few years ago (1910) Dr. Schwertschlager issued a most elaborate examination of the

Roses of the Bavarian Highlands, in which he goes to the trouble of distinguishing some 135 forms and varieties of the Dog Rose, *Rosa canina*.

Asiatic Roses and the Roses of the Caucasus will be found treated at length by Professor Crépin in his *Primitiae*, while the *Systylae* are dealt with in a paper by the same author in Vol. XXV. of the *Bulletin of the Royal Botanical Society of Belgium*.

Professor Crépin's *Primitiae Monographiae Rosarum* appeared between the years 1869 and 1882 in the *Bulletin of the Royal Botanical Society of Belgium*. It contains six fascicles, which were also issued, and may sometimes be picked up, separately. The first fascicle deals with classification of the genus, the second is a revision of the Roses of Willdenow's Herbarium, the third comprises studies in various Asiatic Roses, the fourth American Roses, the fifth contains a revision of the Roses of Besser and Marschall von Bieberstein, chiefly from the Caucasus, and studies in various Roses, while the sixth deals with the Roses collected by MM. V. F. and A. H. Brothorus in the Caucasus in 1881.

While the *Primitiae* contains much learning and careful observation it is not, nor was it intended to be, a complete review of the subject. Many of the views there stated were subsequently modified, and much further information given in Professor Crépin's subsequent articles in the same periodical down to and including Vol. XXXVII., and in the first six volumes of the *Bulletin of the Boissier Herbarium*, as well as in other periodicals. Many of these later articles are very voluminous and complete studies, on the material known at the time, of particular sections, e.g., that on the *Systylae* already mentioned, another on the Roses of Switzerland, a third on European Roses, and a fourth on the Roses of Yunnan; while the Professor never failed to notice and collect the available material on new discoveries as they appeared, such as that of *R. gigantea*, *R. minutifolia*, *R. stellata*, *R. Wichuraiana*, *R. sanota*, and others. One of the most elaborate of the later articles is that on Rose hybrids, which forms a volume in itself. Lindley had long before pointed out that one of the difficulties in dealing with species in the genus *Rosa* lay in the fact that between many of the specific types it was possible to find a complete series of intermediate or transitional forms. If this were so, an intermediate form might be found which could with equal propriety be referred to either species. This view was distasteful to Crépin, who considered that each specific type was capable of precise morphological definition, and that where such definition had failed the failure was due to lack of knowledge and demanded further research. When an examination of the section *Villosae* compelled him to admit the occurrence of complete series of transitional forms in this section, he still clung to his former view, suggesting that the transitional forms might merely indicate that the types were varieties and not specific. It was doubtless to clear his views on this question that his researches in hybrids were undertaken. Crépin's *Vacation Rambles*, or, as he calls them, *Rhodological Excursions in the Alps*, form the subject of another interesting series of papers by this author. They were begun in 1889, and continued yearly to 1894—six years in all—and must extend to some hundreds of pages. They are pleasantly written, and contain much careful observation of alpine Roses.

Over and over again Professor Crépin states that he is preparing a complete monograph on the genus. Not only did he possess a very extensive herbarium of Roses of his own, but he seems to have examined the Roses of almost every known herbarium of repute. This, together with his enthusiasm for his subject, rendered him specially qualified to undertake such a task. *White Rose*.

FOREIGN CORRESPONDENCE.

DUTCH EXPORT TRADE OF HORTICULTURAL PRODUCE IN 1915.

FIGURES are now available regarding the export of fruit and vegetables from Holland in 1915. Great Britain, and especially Germany, have bought large quantities. Owing to its stricken condition through the war, Belgium also increased its orders of such produce, which are used as feeding stuffs. The following figures il-



FIG. 62.—IRIS BAKERIANA: FLOWER PALE VIOLET, SPOTTED WITH BLUE.
(See p. 155.)

Illustrate the exports to the three mentioned countries:

	Great Britain, cwt.	Prussia, cwt.	Belgium, cwt.
Strawberries ...	52	138,312	60
Apples ...	88,294	1,236,746	33,966
Pears ...	75,918	257,410	3,774
Nuts ...	7,022	2,442	284
Grapes ...	5,228	31,790	12
Cherries ...	22,074	48,354	—
Gooseberries ...	4,634	59,192	—
Black Currants	20,980	830	—
Red and White Currants ...	23,236	35,924	40
Cabbages ...	27,426	1,015,760	300,530
Cauliflowers ...	23,630	342,812	1,042
Onions ...	227,630	1,248,838	78,172
Cucumbers ...	77,658	1,068,106	1,034
Tomatoes ...	77,908	64,252	82
Carrots ...	42,818	500,442	82,354
Unenumerated	48,160	1,550,834	14,488
	772,668	7,507,044	545,838

Supplies sent to Germany are ten times as great as those for Great Britain.

The Week's Work.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

THINNING GRAPES.—This should be commenced before the superfluous berries have time to rob those which must remain. Free-setting varieties should be thinned first. Muscats and other shy setters should be left until it can be seen which berries have properly set, as nothing detracts more from the appearance of an otherwise perfect bunch than a sprinkling of seedless berries. Air may be admitted through a small chink during the night, but this should be shut off at day-break to enable the plants to benefit by the morning's damping. As the temperature rises, admit air when the thermometer records 70°, increasing the amount steadily up to 80° or 85°, but as soon as the sun begins to wane the house must be closed and the atmosphere charged with moisture. The secret of successful ventilation at this early season is to maintain a steady rise each day, closing early enough in the afternoon to ensure a genial temperature at night without the use of much fire-heat: scalding need not be feared after the house is closed for the day. Succession vines should be kept well syringed until the bunches are prominent, when syringing must be discontinued. Damping the floors and walls will then be sufficient. If the inside borders have not been watered since the house was closed, weak liquid manure may be given to old vines, and water only to young ones, at a temperature of 80°. This should suffice until after the Grapes are set. After the vines are disbudded, the temperature may rise to 60° at night and 70° by day, with 5° or 10° more with bright sunshine, which will help to lengthen the bunches. These should be reduced to one on each shoot.

POT VINES.—Let the vines with fruits at the swelling stage have a plentiful supply of weak manure water and other stimulants; if the pots are not plunged in a bed of leaves feeding can scarcely be overdone. Continue to stop the shoots at two or three leaves beyond the bunch, pinch all lateral growths at one leaf, and pinch out all other growths as they appear. If the ventilators are arranged in the front of the house, so that the cold air passes through or over the hot-water pipes, they may be left open a trifle on most nights, but be careful not to cause cold draughts by opening the top ventilators wide at the same time. Do not fill the house with steam by sprinkling water on the hot-water pipes, but maintain a moist atmosphere by damping the floors and syringing the walls with tepid water. Take advantage of bright, sunny days to forward the crop, but do not utilise an excessive amount of fire-heat on cold nights; rather be content with a temperature of 65°.

THE FLOWER GARDEN.

By WHITMAN F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

BEGONIAS.—The Begonias which are to be used for bedding may now be brought from the place where they have been stored and placed in a moderately warm structure for the purpose of starting them slowly into growth. Each tuber should be carefully examined, and those which are decayed eliminated. Where only a portion of the tuber is decayed, this part may be cut out without impairing the health of the tuber. Large tubers may be cut in such a way that several buds are left on each piece. When all have been sorted they may be put in boxes filled with leaf-soil and stood in a light position in a temperature of about 50° to 55°. It would be well to set them a fair distance apart according to their size, so that there will be no further need to move them until planting-time, when they may be lifted with large bulbs of leaf-soil adhering and may be planted with a minimum of check. A still better method

would be to make use of any warm pit which is available, make up a bed of leaf-soil fairly close to the glass and plant therein. Later the heat may be turned off and the plants further hardened by removal of the lights. The dwarf *Alyssum maritimum minimum*, which comes true from seeds, may be used as a groundwork for *Begonias*; with a view to this we may now make a further sowing, and grow the young plants in cool conditions so that they will flower early in the season.

PITS AND FRAMES.—Considerable economy may be effected where there is a sufficient provision of warm pits and cold frames, for many plants can be pricked off in them instead of in boxes. Some subjects which respond to this treatment are *Antirrhinums*, *Stocks*, *Asters*, *Border Chrysanthemums*, *Lobelias*, *Salpiglossis*, *Nicotianas*, *Ageratums*, *Alyssums*, and practically all small stuff raised in the spring which do not necessarily require pots. Cold frames for the purpose will soon be available which have during the winter been sheltering *Sweet Peas*, *Pentstemons*, *Calceolarias*, *Marguerites*, *Nepetas* and *Violas*. Movable frames are very valuable in this respect, for when the plants which they have covered are fairly hardened they may be moved off for the protection of others, the plants which they have previously sheltered being afterwards protected by mats whenever the occasion arises. A sowing might now be made in a cold frame of dwarf *Nasturtiums*, which are useful for producing a display on a poor soil. They transplant very well if the seeds are set a few inches apart. When the seedlings appear above the surface the frame may be entirely removed. Plants of *Lavatera rosea splendens* may be grown in similar conditions, and will prove valuable to replace plants which are more costly in labour. Usually they transplant very well.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

MAIDEN PEACH-TREES.—It is a good plan to keep some young trees of Peaches and Nectarines in various stages, so that they are at hand when required to fill blank spaces on the wall or under glass. By this method transplanting can be undertaken earlier in the autumn than would be the case if the trees had to be procured from the nurseries. This is advantageous to the trees, as when planted early, before the soil loses its warmth, the roots become active again almost immediately, and the tree receives very little check. The pruning of maiden and slightly older fruit trees must be undertaken in quite a different way from that recommended in a previous calendar for established trees, as the object here is to build up a good tree, not immediately to produce fruit. These young trees have usually made a limited number of strong growths, which must be cut back to firm, hard wood. Secure these at regular intervals to the wall; they will eventually form the lower main branches of the tree. Extra care must be taken in the disbudding and stopping of the new growths. Keep the centre of the tree fairly open, bending down the stronger shoots to regulate the flow of sap, but allowing the weaker ones to grow naturally. Regular attention to these details is necessary to secure a shapely and well-balanced tree, furnished with abundance of healthy growth.

PEACHES AND NECTARINES.—In many gardens and particularly those situated in low districts where late spring frosts prove harmful to vegetation, it is usual during the winter to loosen the ties or shreds supporting Peach trees to allow the shoots to hang clear of the wall. Being thus fully exposed to all weathers, and losing the warmth of the walls, the trees are retarded as much as possible, thereby deferring the blooming period. But the sap is now on the move, and they should no longer be left untrained, or the buds will be liable to damage when the shoots are handled for cleansing purposes. Provided the shoots were disbudded and pinched systematically last summer, very little pruning will be necessary now. Weak or badly ripened shoots that have been previously overlooked should be removed entirely, cutting them back to a good bud. Cleanse the trees thoroughly with

an insecticide, especially if they are infested with scale insects. Scrub the hard wood with Gishurst Compound or strong soap-and-water, working the lather into all the crevices and rough bark. Spray the smaller shoots in the ordinary way. Walls on which trees have been nailed for many years become full of holes, which offer lurking-places for insect pests. To obviate this, while the trees are detached from the wall the latter may be re-pointed with cement and the holes filled in. As a point of economy in labour the use of wire for training Peach and other fruit trees on walls has much to recommend it, and though some good fruit-growers object to wired walls, personally I have seen no harm which could be directly traced to the use of wires. Having cleansed the trees, fasten the main branches firmly in position by strong twine, and then fill the intervening spaces with young shoots, training them thinly and regularly over the allotted space. Strictly avoid training in too many shoots—a common error, and fatal to the health of the tree. The fruit-bearing shoots should be at least 9 inches apart; one rarely sees a Peach tree trained too thin. In tying the shoots let the string or matting be first passed round the wire, so that the bark does not come into immediate contact with the wire, as, if the latter is new, this may prove harmful. In tying, allow for the wood swelling when growth commences.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

GENERAL REMARKS.—With the arrival of March, the busy season amongst Orchids may be said to have begun. Many plants will require repotting, and extra attention to routine work will be necessary. A more liberal treatment of all Orchids should be the rule, and the temperatures may be slightly raised in all divisions. As a general guide, the following table may be useful:—

	Day.	Night.
	Deg.	Deg.
East Indian or warm house	70	65
Cattleya house	65	60
Intermediate house	63	57
Odontoglossum or cool house	55-60	53-55
Seedling house (warm, Cattleyas, etc.)	70-75	65
" " (cool, Odontoglossums, etc.)	60	58

The maximum reading should be reached about mid day, and sudden fluctuations of temperature should be avoided as far as possible. An onrush of sunshine may cause a rapid rise in the temperature, but no anxiety in this case need be felt, if due attention is paid to ventilation and shading. A close watch must also be kept on the fires, in conjunction with which the weather must be studied. On bright mornings they should be closed down, but they must be started sufficiently early to prevent a sharp fall in the temperature late in the afternoon when the sun is fast losing its power. Each department will require damping down every morning directly the normal temperatures of the different houses are reached; such work must always be carried out with a rising and not a falling temperature. With regard to ventilation, air may be admitted whenever the weather is favourable. Care and discretion are needed, when the top ventilators are open, to prevent cold draughts of air passing over the plants. It is better to open all the ventilators a little than one to its fullest extent. Except on favourable occasions, the top and bottom ventilators ought not to be open at the same time; but as the season advances, more freedom in admitting air may be practised, especially in the cool houses. Most plants will now take more water than hitherto, but moderation must be the rule, and it should be noted whether the plant is in active growth or dormant. The temperature of the water in the tanks should be ascertained, and if below that of the house, warm water must be added. Certain Orchids, particularly *Cypripediums*, *Odontoglossums*, and seedlings of all kinds, are benefited by occasional sprayings overhead with tepid water. The degree to which both spraying and damping down may be carried out will be governed by the conditions prevailing outside. Moreover, some houses retain moisture for a much longer period than others. If the plants have been overhauled and

cleansed during the winter months, scale and similar pests ought not to prove very troublesome through the spring and summer months. Thrip and aphids, however, may appear from time to time, and the houses must be vaporised with some reliable fumigant directly their presence is detected.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

BEGONIA GLOIRE DE LORRAINE.—There should now be plenty of young shoots on the old plants of *Begonia Gloire de Lorraine* suitable for cuttings. The best shoots are those which are produced from the base of the plants. Dibble them into pans filled with sand, or a light, sandy compost, and place them in the propagating-case. Spray them two or three times a day with luke-warm rain-water and shade them from bright sunshine till rooted. This *Begonia* may also be propagated by leaves, but the method should only be adopted in the event of cuttings being scarce.

HELIOTROPE.—A good batch of *Heliotrope* cuttings rooted now will be useful for flowering during the summer months. Young shoots taken from the old plants will readily root in pans or pots filled with a fine, light, sandy soil. A little bottom heat is necessary in which to plunge the pots. Keep them close and shaded from sun, and syringe them twice daily. When rooted transfer them to 3-in. pots, and keep them growing gently in a warm house or frame. They must be stopped two or three times during the growing season to encourage a bushy habit. Transfer them to 5-in. pots to flower.

PLUMBAGO ROSEA.—A fresh batch of plants of *Plumbago rosea* may now be propagated from cuttings. Insert three or four cuttings round the side of 3½-in. pots, and plunge them in the propagating case. When rooted, place them in 3-in. pots in a light position in the stove. Syringe them freely with rain-water during warm, sunny weather. In order to obtain bushy plants, the growths must be pinched once or twice during the growing season. Some of the most promising of the old plants may be shaken out and repotted in a rich compost. These will make extra large specimens.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wixton Abbey, Banbury, Oxfordshire.

GLOBE ARTICHOKEs.—Remove all protective material from these vegetables at the cessation of severe weather, or much loss will result from decay. After filling up any gaps with fresh divisions, apply a good dressing of manure between the rows and lightly fork it in. It is a good plan to replant half the bed annually with young plants, raised from seeds, to maintain a succession after the old plants have finished producing heads for the season. Seed should be sown now in boxes placed in gentle heat. Transfer the seedlings to a mild hot-bed when large enough to handle. These should be suitably hardened off and transferred out of doors in May. They will supply a succession of heads from August to November.

TOMATOS.—The present is a suitable time to sow seeds to obtain plants for transferring out-of-doors at the end of May or beginning of June. To economise time and labour sow a few seeds in the centres of 4-inch pots filled with similar compost to that advised on page 5, subsequently retaining only the most promising seedling. By this system the plants may be shifted direct into their summer quarters without further re-potting. Grow the plants hardy from the start. *Eclipse* and *Money-maker* are suitable varieties for outdoor cultivation.

VEGETABLE MARROW.—If a mild hot-bed and frame can be spared they may be advantageously utilised for producing an early crop of Vegetable Marrows. A barrowful of fairly rich soil, placed as a mound in the centre of each light, will suffice for a rooting medium. Sow a few seeds direct on each mound. The *Sutton* and *Moore's Cream* are suitable varieties for frame-culture.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would oblige by sending in their communications and saving us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Letters for Publication. as well as specimens of plants for naming, should be addressed to the **EDITORS**, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

SATURDAY, MARCH 18—

B.G.A. (Leamington, Warwick and District Branch) meet. (Lecture on "The Cultivation of Vegetables" by Mr. E. R. James.)

MONDAY, MARCH 20—

Nat. Chrys. Soc. meet at Carr's Restaurant, Strand, London (Lecture by Mr. Percy A. Craig on "How to Raise Chrysanthemum Seedlings").

FRIDAY, MARCH 24—

Royal Inst. (Lecture by Prof. W. M. Baylis, on "Chemical Change in Living Organisms.")

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.5.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. **Thursday, March 16** (10 a.m.); Bar, 29.3; temp, 49°. Weather—Slight rain.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY, AND FRIDAY—

Bulbs, Herbaceous Plants, Shrubs, Roses, by Protheroe & Morris, 67 and 68, Cheapside, E.C., at 12.

MONDAY AND WEDNESDAY—

Rose Trees, Shrubs, Perennials, etc., at Stevens's Rooms, 38, King Street, Covent Garden, at 12.30.

TUESDAY, WEDNESDAY, AND THURSDAY—

Orchids, Greenhouse Plants, Greenhouses, etc., at Messrs. Bull's Nursery, King's Road, Chelsea, by Protheroe & Morris, at 12.

WEDNESDAY—

735 cases Japanese Lilioms, at Protheroe & Morris's Rooms, at 3.

THURSDAY

Special Sale of Roses at Protheroe and Morris's Rooms, at 1.

FRIDAY—

Nursery Stock at John Russell's Nursery, Sheepcote Road, Harrow, by Protheroe and Morris, at 12.

The Planting of Fruit Trees.

In a recent number we referred to certain matters in the fifteenth report on the Woburn Experimental Fruit Farm. The following observations deal with fruit tree planting.

The ninth report gave evidence to show that the planting of trees with bruised roots left untrimmed was beneficial rather than otherwise. The numerous and elaborate trials with Apples, Pears, and Plums, made since the ninth report was written, showed "a balance in favour of trimming amounting at most to 15 per

cent.; a further series with Apples showed no significant balance either for or against trimming; and the final series with bush fruits showed a large balance in favour of not trimming." Hence, it is concluded that trimming the roots is altogether unimportant. So far as Apples, Pears, and Plums are concerned, this conclusion is hardly justified by the results of the experiments, seeing that a balance of 15 per cent. in favour of trimming is quite a substantial advantage. As for the bushes, the experiments dealt with only fifty Red Currants and fifty Gooseberries, and while the former showed a balance of 16 per cent. in favour of not trimming, as estimated by weighing the bushes before planting and at the end of the season, the latter showed a like balance of 5 per cent. Together, the balance is much less than that of 15 per cent. in favour of trimming in the trials with Apples, Pears, and Plums, which is treated as an almost negligible quantity in the report. Moreover, Mr. Pickering states with respect to the bushes: "It is difficult to believe that this superiority can be attributed directly to the rough treatment of the original roots, and that it is not due to some other cause which has escaped detection." Probably, most fruit growers who read the report will endorse this admission. At the same time, it must be allowed that the experiments indicate that the advantage of trimming bruised roots is much less than it has been commonly supposed to be. As pointed out in the report, new root growths do not proceed from a cut surface, upon which a callus always forms. They issue from various places above the cuts and from the stems, and they do the same from above the bruised or broken parts.

On the subject of careless planting, only the averages of results obtained previous to and since the ninth report was written are given. The figures show for five years averages of 97 for wood growth and 105 for leaf size for carelessly planted trees, as compared with 100 in both respects for carefully planted trees. Unless the holes dug were wider for the trees carefully planted than for the others, it is quite possible that the spreading out of the roots, so that they would come against a solid wall of soil on each of the four sides of a hole, would do more harm than good; but it cannot be believed that stamping on the roots not well covered with soil, and thus bruising and disbarking them, can be otherwise than injurious. The careful sifting of soil among the roots is probably of no considerable value, because the soil should be made thoroughly firm over the roots, and this neutralises the former operation.

Except where the soil was over the London clay, in which case much harm was done by ramming, the average of numerous trials in different parts of the country was in favour of the operation, in reference to wood growth and leaf size alike. Firmness of the soil over the roots is, perhaps, the most important of all details in planting, and if this cannot be secured without ramming, that operation is probably desirable. In ex-

periments carried out in two orchards under our observation no difference can be seen in the growth of rows of trees rammed and those next to them simply stamped in; but thorough stamping when the roots are sufficiently covered with soil is always enjoined upon the planters. In an orchard of six acres, planted in the winter of 1909-10, the finish of the work was done when the land was so wet that the trees were necessarily "puddled in." To-day, those trees are as flourishing as any planted under drier conditions. A rammed row, planted when the soil was in fair condition, shows no superiority or inferiority to the adjoining rows of Apples of the same variety stamped in.

The results of experiments with numerous varieties of Apples on heavy land show that in seven years the average wood growth of those planted on the surface and mounded up was considerably less than that of trees of the same varieties planted at the ordinary depth. This is in accordance with expectations, as trees planted on the surface level must suffer more from drought in dry seasons than those planted below the surface. The result must be all the worse unless, in the frequent hoeings around the trees, the workmen are careful to draw the soil towards each tree, and not away from it, a method occupying more time, and involving a greater expense than ordinary hoeing. On the other hand, the mounding plan reduced liability to canker, probably, as the report suggests, in consequence of the less vigorous and sappy growth induced by high planting.

THE "JOURNAL OF HORTICULTURE" AND THE "HORTICULTURAL DIRECTORY."—The copyrights of the *Journal of Horticulture* and *Horticultural Directory*, until recently published at 10, Essex Street, Strand, have been purchased by the *Gardeners' Chronicle*, Ltd.

R.H.S. SALE OF PLANTS FOR THE RED CROSS FUND.

—In accordance with a suggestion made by Mr. Elwes at the annual meeting on February 8, the Royal Horticultural Society will hold a sale of plants, bulbs, etc., in the R.H.S. Hall in the autumn of 1916, in aid of the Red Cross Funds, provided that the contributions offered are sufficient to justify a sale. Those proposing to send plants, bulbs, and such like for sale are asked to intimate their contributions beforehand. Owing to the unusually early season, it was not thought practical to hold the sale in the spring of this year, and it has accordingly been deferred until the early autumn. The following have been appointed as a sub-committee to carry out the arrangements:—Col. MARK LOCKWOOD, M.P., C.V.O., Sir HARRY VEITCH, V.M.H., Mr. E. A. BOWLES, M.A., and the Rev. W. WILKS, M.A., V.M.H. Further information respecting the sale will be made known in due course.

MR. GEORGE CASELTON.—The many friends of Mr. GEORGE L. CASELTON will regret to learn that he is no longer Garden Superintendent of the Crystal Palace, and will still more keenly regret the cause of his retirement. His health broke down last autumn; since November he has been unable to carry out his duties, and still remains confined to his bedroom. Mr. CASELTON succeeded the late Mr. W. G. HEAD, at the Crystal Palace, nineteen years ago, having been engaged for about twenty-one years pre-

vionsly under Messrs. MILNER AND SON, the eminent landscape gardeners, in laying out new gardens and carrying out estate improvements in various parts of the country. As all who know anything of the crippled financial resources of the old Palace Company are aware, his position was anything but a bed of Roses, but he loyally gave the old company of his best, and by his good management, resourcefulness, and admirable tact, kept up the gardening reputation of the famous place of public resort to a level that won the admiration of all who knew his difficulties; while his courtesy and helpfulness to exhibitors at the various exhibitions gained for him their warm

£25,000 to purchase Den of Mains Park for the city of Dundee. Sir JAMES purchased Belmont Castle after the death of Sir HENRY CAMPBELL-BANNERMAN.

"FOOD PRODUCTION IN COTTAGE AND ALLOTMENT GARDENS." The object of this pamphlet (Bulletin No. 72), written by Mr. A. HOSKING, of the West of Scotland Agricultural College, is to help the cultivator of the small garden. It gives useful advice on the elements of cultivation of soil, the use of manures, and on the rotation of crops in the kitchen garden. After the general instruction each of the chief crops is treated of—of course very briefly—and notes are given on the insect and other animal

successfully started in Hertfordshire, at Little Gaddesden. A society has been formed known as the Little Gaddesden Allotment Society, of which the manager is Mr. D. D. ROBERTSON. The society was formed in 1914, with fewer than a dozen members, and it acquired an acre of land. The first crop sown was Barley, which was not a success; in 1915 Potatoes were raised instead, which were found profitable, the net return being about £11 after all expenses were paid.

THE POTASH DEPOSITS IN ALSACE.—The deposits of potash salts in Alsace, as described by M. HENRI BLIX in a recent article in the *Revue Générale des Sciences*, cover an area of about 50,000 acres. They are estimated to



FIG. 63.—*COELOGYNE CORYMBOSA* AT COLESBORN.
(See "Notes from a Cotswold Garden," p. 161.)

esteem and kindest regards. Their sympathies will be with him in his hour of adversity.

PRESENTATION TO A GARDENER. Mr. A. HARMAN, gardener at The Glebe, Champion Hill, has received a presentation of a watch from his employer, Sir ALEX. D. KLEINWORT, Bart., in recognition of 25 years' faithful service. Mr. HARMAN is one of the most successful gardeners in the London area, as the condition of the gardens and plant-houses at Champion Hill testify. Sir ALEX. KLEINWORT is a gardening enthusiast, and has sent Mr. HARMAN both to France and Switzerland in order that he might study the art of gardening in those countries.

THE LATE SIR JAMES CAIRD. Amongst the many benefactions of the late Sir JAMES CAIRD, who died at his home, Belmont Castle, Perthshire, on the evening of March 9, was that of

and fungous pests. The pamphlet contains a large amount of useful information, and should prove helpful to the beginner, for whom it has been written.

PURE SEEDS ACT, QUEENSLAND.—Since the Pure Seeds Act, Queensland, came into force in January, 1915, 467 samples of seed have been tested, of which 29 came up to the standard, 26 samples attained that position after cleaning and grading, 47 samples were classed as being of low grade, and 165 samples were condemned for impurities or want of germination. The fact that nearly half of the whole numbers of parcels of seed examined had to be condemned clearly indicates the necessity for the Act.

CO-OPERATIVE AGRICULTURE.—We have received particulars of a scheme for co-operative agriculture on a small scale which has been

contain 3,000,000 tons of potash, which would suffice at the present rate of use to supply the world for five centuries. The potash is chiefly in the form of chloride.

REPORT OF FIELD TRIALS (POTATOS).—The report of the 1915 Field Trials carried out by Mr. J. DUNLOP at the Midland Agricultural College, Kingston-on-Soar, gives a record of valuable work, particularly in the trials of Potatoes. In trials of early Potatoes (planted April 8, and raised August 5), *Epicure*, which was first, was followed by *Sharpe's Express*, *Ninetyfold*, *Eclipse* and *Arian Early*. Of early varieties allowed to ripen off, *Epicure* again led. The first of the second earlies was *Great Scot*, followed closely by *British Queen*. The former, it may be remembered, cropped remarkably well in the Wisley trials, and received an Award of

Merit, Arran Chief did best in the trials of late varieties, and the Northern Star type also yielded well. A comparison of the yields of Scotch and English seed leads to the conclusions that among second earlies Scotch seed was inferior, but with main crop and late Potatoes the Scotch seed gave in the great majority of cases strikingly better results. The excess of yield per acre from Scotch seed over English seed was as follows:—King Edward VII., over 4 tons; Northern Star, over 2½ tons; Arran Chief, nearly 2 tons. The great superiority of unripe over ripe seed was also well shown. The "unripe" seed used was of King Edward, dug on September 9, and the "ripe" that of the same variety, lifted on October 15. The unripe yielded a total of 12 tons 19 cwt. 42 lbs., the ripe 6 tons 4 cwt. 62 lbs. In either case seed Potatoes sorted between a 1½ inch and 2 inch middle were planted.

WAR ITEMS.—The French Minister of War has decided that permission will be given to a certain number of soldiers on active service to be released for the purpose of doing necessary agricultural work in the various rural parts of France, where such help is required.

—Two cases of interest to gardeners were dealt with by the Midlothian Tribunal on March 10. In the first the Edinburgh and East of Scotland College of Agriculture appealed for the exemption of the head gardener of the College Garden at Dreichorn. In ordinary times the College has four lecturers and three gardeners. At present they have only one lecturer and one gardener, while there were 75 students, principally young women. The appeal was dismissed. In the other case a market gardener, 29 years of age, appealed. The military representative said that there were two brothers, and that the appellant had previously stated that he was willing to serve after April. The claimant stated that he and his brother were partners, and that they had a piggery in addition to the market garden. His brother was on the reserved lists, but it was the claimant who was the skilled man. Exemption was given until June 1. The East Ashford (Kent) Tribunal refused an application for the exemption of a foreman gardener employed by Lady Northcote at Eastwell Park, Ashford.

DOUBLE GERBERAS.—M. DUBOIS, a local nurseryman, has just shown at the Antibes Horticultural Society a collection of double-flowered hybrid Gerberas of his raising.

THE LASTING QUALITIES OF MODERN DAFFODILS.—On February 29 last Messrs. BARR AND SONS exhibited a flower of a new Daffodil named Ptolemy, and the flower was afterwards exposed in the shop window until March 9, when it was sent to this office still in a fresh condition. The specimen was, however, cut on the 25th ult., and it finally showed signs of shrivelling on March 15, seventeen days later. Ptolemy is a large trumpet Daffodil with sulphur-coloured segments and lemon trumpet. The height of the plant from the ground was 12 inches, and the substance of the flower remarkable, which doubtless explains its lasting qualities.

DISTRIBUTION OF THE BOX.—At the meeting of the Linnean Society, on the 2nd inst., Dr. STAPF spoke on the distribution of the Box, *Buxus sempervirens*, Linn., and especially on the relation existing between the English stations and its area on the Continent, supporting his remarks by lantern-slides (distribution-map and views of Box on Box Hill and in the Chilterns, the latter taken by Mr. JOHN HERMISON). He pointed out that he adopted Dr. CHRISP's views as to the character of the Box as a relict of the Tertiary flora of Southern Europe, and the discontinuous distribution as brought about, by disintegration of an old, continuous and much larger area. But he could not share his view

that the isolated stations in Western France are generally due to old plantations around castles and monasteries. He considered them, like the English stations, to be relict stations. He finally expressed a wish that these should be more thoroughly studied than has been hitherto, and carefully preserved as far as possible.

LEAF ARCHITECTURE.—At the meeting of the Royal Society of Edinburgh, held on the 6th inst., Professor BOWER, F.R.S., made a communication, with lantern illustrations, "On Leaf Architecture." He stated that a knowledge of the architecture of leaves should be gathered from three sources, namely, comparison of forms of the adult leaf; comparison of the juvenile leaves, especially of the more primitive forms; and comparison of early fossil forms. Hitherto the first and third methods have been widely used, but the second neglected. In this paper the facts had been collected relating to the juvenile leaves of the most primitive pteridophytes. The result arrived at by Professor BOWER was that all complex leaves of vascular plants may be derived ultimately by dichotomous branching from simpler forms.

SALT AS A TOP DRESSING.—The common view that salt is a useful top-dressing for various crops was tested by experiments carried out at the Midland Agricultural College in 1915. The crop employed, Mangolds, showed that a dressing of 1 cwt. per acre of salt gave an increase of yield of 1 ton 15½ cwt. per acre. When used together with nitrate of soda (1 cwt. per acre) the increase was as great, and so was it when other sources of nitrogen (nitrate of lime and granular nitrolim) were used with and without the addition of salt. The above results were obtained on light land; on heavy land the increase brought about by the use of salt was far greater. Thus, where no other dressing was given, the yield from the salted land was over 5 tons per acre greater than that from land not treated with salt. When nitrates were added the increase brought about by adding salt, though still considerable, was not so great. Salt and nitrate of soda (1 cwt. per acre) gave over 3 tons more yield than did nitrate of soda alone. Salt and nitrate of lime (1½ cwt.) produced 1 ton more than nitrate of lime without salt, and salt and granular nitrolim (1 cwt.) yielded 3 tons 9½ cwt. more than the nitrolim alone. The more marked result in the heavy land is no doubt to be attributed to the fact that by the action of salt large supplies of potash were liberated and rendered available for the nutrition of the plant, whereas no such stores of potash exist in the light land.

NOTES FROM A COTSWOLD GARDEN.—IV.

THE snow has now covered the ground for nearly three weeks, and, though it has melted under trees and on sunny banks, outside work has been impossible, and our short-handed position in farm and garden will make arrears difficult to overtake. The weather has been peculiar in this respect, that the snow came in at least four successive falls, and has more or less melted every day both above and below, so that on the low ground in the Thames valley it did not last so long. Here the lowest temperature has been 15°, not so cold as we have had it before in March without snow; so I do not think that plants will suffer as much as one would expect, if the wind changes, and we do not have bitter frosts with a bright sun by day, which does more harm than a much harder frost in December would do.

As there is nothing to write about in the open I must confine my notes this week to greenhouse plants, and happy is the gardener who has as much variety in the houses as I have. I have

often wondered why so many of the best gardeners waste their space on masses of common plants like Chrysanthemums, Carnations, Cinerarias, and such like, which, however showy, have not a tithe of the variety, interest, and beauty of many other plants just as easy to grow, and which do not occupy so much space. Among the prettiest plants now in flower is *Senecio Heritieri*, D.C., which I owe to Messrs. Suttons' kindness. They inform me that it was re-introduced by Lady Strathallan from Teneriffe, but it is a very old plant in cultivation, as there is a figure of it in *Bot. Mag.*, t. 3827, and another in *Bot. Mag.*, t. 53, under the name of *Cineraria lanata*, l'Hérit. Neither of these is, however, so handsome as the variety which I have. This has bright magenta rays and disc, whereas the var. *cyanophthalma*, *Bot. Mag.*, t. 3827, has white rays, and the older form is figured with pink rays. It is easy to propagate by cuttings, and requires no special care.

Another charming plant of most unusual colour is just coming into flower, which I owe to Mr. Poë's kindness, and have found quite easy to grow in pots hung close to the glass in a cold house. This is *Babiana rubrocyanea*, Ker, *Bot. Mag.*, t. 410; it may be only a colour variety of *Babiana stricta*, as Baker thought, but its ultramarine blue flowers with a large crimson centre make it much superior in my eye to any other *Babiana* that I have seen. Why so many of these good old things are almost forgotten and neglected, in favour of much inferior novelties, as some of the Chinese plants seem to be, I do not understand; I think that Mr. Farrer would have been disappointed if he had seen the poor specimens of *Isopyrum grandiflorum* exhibited at the R.H.S. last week. It can, however, be a much better plant, as is shown by a dried specimen kindly sent to me by Prof. Balfour from Edinburgh, where it has flowered for a second time. If the plant figured by Royle is a fair representation of it, it must be a much finer plant in Kansu than in the N.W. Himalayas, where Royle says it varies very much in size. If my memory is correct (but for this I will not vouch, as all my specimens were lost in fording a river) I found the same or a nearly allied species in the Altai mountains in 1899, whence Ledebour described it many years ago. *Isopyrum grandiflorum* seeds itself freely, but seems very liable to decay from a fungus which attacks the tuberous roots in summer when the plant is at rest. Can anyone tell me whether this is also the case when it is grown in the shade?

Among the prettiest plants now in flower I may mention a little Orchid introduced by Messrs. Sutton from Yunnan some years ago, which has proved very easy to grow, and which increases rapidly. This is *Pleione yunnanensis* (see fig. 64), which after remaining dormant for some months is now expanding its very beautiful flowers in a temperature of 50° to 60°. I grow it in small pans near the glass, and have no doubt that it would do in the open air in the mildest parts of this country if shaded and watered regularly in summer. *Pleione humilis* is another almost as beautiful, which I treat in the same way; but though it grows in Sikkim at an elevation where snow and frost occur in winter, it does not seem so easy to keep in good health as *yunnanensis*.

A third species which has just come out is *Pleione formosana*, which Mr. R. M. Price, my companion when travelling in that island, introduced three years ago. It has the round pseudo-bulbs of *yunnanensis*, with flowers more like those of *humilis*. I may say that Mr. Price has been gallantly serving his country in the Gloucestershire Territorial Artillery, which he joined as a private in September, 1914, and has come through nine months of service in France without injury. Let us hope that he will be spared to continue the botanical explorations which he began so well in Formosa.

There are two species of *Coelogyne*, both of which I have collected at from 6-9,000 feet in Sikkim, and which I can confidently recommend as beautiful and very easy to grow in a cold house. One of these is *Coelogyne ochracea*, Lind., *Bot. Reg.*, 1846, t. 69, which I found on a Yew tree on Tonglo in 1881, and have had ever since. The other is usually known as *C. ocellata*, Lind., and is so named in Veitch's *Manual of Orchidaceous Plants*; but Hooker points out in *Flora of British India*, V., p. 837, that the plant, which is wrongly named and figured as *ocellata*, Lind., in *Bot. Mag.*, t. 3767, is really *C. nitida*, Lind., which flowers from the mature bulb, and not, as in both the above-named species, from the young growths. Its correct name is therefore *C. eorymbosa*, Lind., *Bot. Mag.*, 6955 (see fig. 63). The flowers of all three are very much alike in colour and markings, but *ochracea* has erect pseudo-bulbs, narrower and less wrinkled, flowers with me a month later, and is very sweetly scented. I found it in 1914 on Oaks in the Lachen Valley and elsewhere, and have no doubt that when at rest both these plants will endure a few degrees of frost without injury.

A very beautiful *Campanula* which I believe to be *C. Celsii* is in bud here, which was shown by Miss Landale at the Chelsea Show two years ago, and is figured in the *Chronicle* of May 23, 1914, as "*C. tomentosa* Maud Landale," under which name it received an Award of Merit; but I wish to give its history before this incorrect name becomes generally used in our gardens, which is likely to be the case; as it is stated in a contemporary that the original stock is now being distributed by Mr. Page. The plant was introduced to cultivation by Mr. C. D. Rudd, who saw it in flower in Delphi, in Greece, where it grows in crevices of the rock and on the temple ruins. He grows it very well in his garden in Argyllshire, both in pots and on the rockery, where, he tells me, it has withstood 20° of frost without injury. I looked it up in the Herbarium at Kew with Mr. W. W. Smith, of the Edinburgh Botanic Gardens, where the plant is grown in pots and flowered beautifully last May. *C. tomentosa*, Vent., is founded on Plate 18 of *Hortus Celsius*, but this is a poor illustration, and does not show the basal leaves of our plant, which in the first year, before the flower-spike appears, form a flat-spreading rosette. Halaczy, in *Flora Graeca*, gives three species, distinguished by the shape of their pale blue flowers, as follows:—*C. Celsii*, D.C. = *tomentosa*, Vent.; *C. Andrewsii*, D.C. = *tomentosa*, Boiss.; and *C. rupestris*, Sibthorp = *lanuginosa*, Willd. The latter is beautifully figured in Sibthorp and Smith's *Flora Graeca*, t. 213, and our plant may be a variety of it, though Halaczy refers it to *C. Celsii*. Mr. Smith and I agreed that on the evidence of the figures and dried specimens *C. Celsii* would be the correct name to use; and with all respect to Miss M. Landale, neither she, nor the Floral Committee of the Royal Horticultural Society, has any right to attach her name to a wild species, and thereby convey the idea that it is a florist's variety, so I hope that her name may be dropped. I may add that the plant is a biennial, and when well developed has a central branching flower-stem a foot or so high. It has seeded freely with Mr. Rudd, to whom I am indebted for some nice plants, some of which, however, damped off during the last wet autumn. It requires a vertical position in a hot, well-drained situation. *H. J. Elwes*.

•• NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of ½d. every two ounces.

THE LATE MR. DREW.

THE death of Mr. F. G. Drew, Horticultural Instructor at University College, Reading, has deprived the world of horticulture of an enthusiastic and earnest worker, and has robbed many of us of a dear friend.

Mr. Drew possessed many qualities rarely found together: Intelligent without the hard pride which goes so often with intellectual ability; gentle and yet not timid; a man of high ideals who never made his aspirations an excuse for neglecting the severe routine of duty; these were among the remarkable qualities which endeared him to his friends and make his loss indeed irreparable. For the loss of a distinct personality is the worst evil that death can encompass, and to Mr. Drew was given this priceless possession.



FIG. 64.—PLEIONE YUNNANENSIS: FLOWERS ROSE LILAC.

(See "Notes from a Cotswold Garden.")

son, which his friends admire and of which now only the memory is left.

His work at Reading difficult and disappointing as is all work of instruction—was loyal, honestly and well done, and his best pupils are among those who mourn him most.

It is to be feared that Mr. Drew could have made but insufficient provision for his large family—he had eight children, the eldest of whom, a daughter, is about 15 years of age. Doubtless the authorities of University College, Reading, with their known generosity in such cases, will do what lies in their power to render assistance to his family, and from the letters we have received we know that the friends of

Mr. Drew will desire to render help if it be found—as we fear is bound to be the case—that his wife and children are in need.

Although immersed in the hard routine of managing the Gardens at Reading and in instructing students in the practice of horticulture, Mr. Drew never lost sight of the value of investigation in horticulture. He was not one of those who believe that the knowledge we possess—even of gardening—is final or complete. He had a warm sympathy with the investigator, and the writer of these lines enjoyed often the marks of that sympathy as he enjoyed the friendship of that true gentleman.

Though only 44 years of age, Mr. Drew had had a wide and long experience in gardening. He began his career in 1886 with Messrs. A. A. Walters at Bath, and went, after four years, to the gardens of the late Mr. C. W. Mackellop, Weston, Bath, where he worked for two years. After a year spent in the fruit department of the gardens of the Earl of Stamford and Warrington (Eville Hall, Stourbridge), Mr. Drew was for 18 months engaged in the hybridising department of Messrs. Sander & Co., St. Albans. From 1895-97 he was Orchid grower in the gardens of the Duchess of Marlborough, The Deepdene, Dorking. After periods of employment in other great gardens—as foreman at Buxton Park and general foreman at Longford Castle—he worked for several years in Messrs. Jas. Veitch & Sons' fruit nursery at Southfields. He did notable work during his employment (1903-8) in the service of Mr. Douglas Freshfield, completing and extending the new gardens at Wych Cross Place and undertaking the reclamation of a large area of poor moorland soil. In 1909 he found a most congenial work in the post of Lecturer in and Superintendent of Horticulture in the College at Reading, in which post he succeeded the late Mr. Charles Foster.

THE APIARY.

By CHLOIS.

DISEASE. Looking back over a number of years one recalls the days when the present methods of bee-keeping were unknown, namely, the days of the skep. During this period we had a pure race of native bees, which were undoubtedly hardy, and we never read that disease was commonly known. For this reason I would suggest that beekeepers should endeavour to do without foreign queens, and return to the native races. Again, in those days the same combs were not used again and again, for bees were sulphured at the end of the season, and increase was by swarms put in clean skeps. To remedy our present methods the hives should be more thoroughly cleansed each spring and autumn, the frames refitted oftener with foundation so that the combs shall not be used year after year, thus reducing the size of the bees, because each time a bee is hatched and leaves the cell a cocoon is left behind, thus reducing the cell space by that amount each time. Perhaps our methods of queen raising are at fault, and, consequently, it would be better to try to leave queen raising to Nature. I do not mean to assert that modern beekeeping is all wrong, but I wish to rouse beekeepers to think that something is wrong, or disease would not be so prevalent.

GENERAL.—In consequence of the continued rain there is great need for watchfulness on the part of the bee-keeper. Where painted calico is not the protective covering of the roof of the hive, each roof should be examined in order to ascertain if there are any leakages. Should they be faulty, dry quilts must be found to replace those soaked, and a new roof requisitioned to make the roof watertight. From this it will be seen how essential it is to have all hives of one pattern and size, so that the parts may be interchangeable. As the soil is now so waterlogged there is a grave danger of one or more legs sinking into the ground, and causing the hive to tilt, and the water to find its way into the interior through the ventilating-hole. It is not uncommon when the tilt is backward to find the floor-

board saturated, as the wind has driven in the rain through the entrance. Through defective painting and perhaps neglect the plinth may be porous, and to remedy this fill the crevice with white lead and cover with a strip of calico until the weather admits of perfect repair.

BIRDS.—Blue tits are very troublesome in some districts, for whenever the days are bright the bees are on the wing, and these eager foragers are ever on the watch, and sometimes even tap at the entrance to induce the bees to come out. To put an end to the trouble we must shoot or trap the birds.

DEAD BEES.—During the middle of a fine day it will be well to look around to see if every hive shows signs of life; where no bees are on the wing it will be advisable to examine the interior, and if the inmates be dead, burn them carefully to prevent the spread of disease (especially Isle of Wight disease), melt down the combs and burn the frames. Afterwards thoroughly cleanse the hive by washing with one of the usual disinfectants. It is not too late for a fall of snow even in the South of England. Should this occur, rake off all the snow from the roof and entrance, as well as all dead bees around the entrance—these have often caused the remaining bees to be suffocated—and shade the entrance from the powerful midday sun, which often causes the bees to take a flight, and, as a consequence, they are cut down by the piercing cold prevalent at such times. The best device is a board which rests against the front of the hive. Now is the best time to purchase appliances to prevent disappointment later.

FEEDING.—If it be suspected that the bees are in need of food, the quilts should be turned back during the hottest part of the day, and if the upper cells are unsealed there can be no further cause for doubt about the shortage. No examination must be made by taking out the frames, as the weather is not fit, and undue interference may cause the bees to ball the queen at this season. As the queen is laying eggs in increasing number, a little pea flour may be added to the candy to supply the necessary nitrogenous matter for the raising of brood. A piece of candy, warm, weighing about 2lb., should be placed above the cluster on those colonies requiring food. Some bee-keepers use granulated sugar instead of candy, but this is a grave error, because it is too stimulative in its effect. Candy feeding is done with one object in view, viz., making good the deficiency in the bees'arder.

DYSENTERY.—This disease will probably make its appearance owing to the copious rainfall of the winter, for its commonest cause is a wet hive. The usual external sign is brown marking on the alighting board and hive; the marks are the faeces of the bees. Dysentery, of course, is another name for diarrhoea. The cure is a dry, warm hive. This is an instance where a complete overhaul must be undertaken, or the whole colony will perish. Should the frames be badly covered with excreta other sealed stores or candy must be provided, to which must be added a generous supply of warm quilts, and a soft cushion of dry leaves, sawdust, chaff, or cork dust will make a good finish to the task by filling up each corner so as to leave no gaping openings.

FRENCH NOTES.

GLANDINA GUTTATA—A MEXICAN MOLLUSC IN FRANCE.

In the past few years attempts have been made to introduce into France species of molluscs which feed on slugs and snails. An experiment of this kind was made with the Mexican species, *Glandina guttata*. A consignment of these animals sent to France was distributed among various naturalists and horticulturists, including, among the latter, M. Philippe de Vilmorin. Observations carried out at Verrières le Buisson, and reported by M. de Vilmorin (*C. R. Acad. Sci.*, December 2, 1912), show that *Glandina* maintains its carnivorous habit,

and that it is capable of devouring a snail almost as large as itself (see fig. 65).

Unfortunately, although the *Glandina* produced eggs, only one adult was to be found in the subsequent year. Hence it remains doubtful whether this carnivorous mollusc is likely to prove an aid to the gardener in keeping down the slugs and snails which damage his crops.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

FROST AND THE PLANTS' AWAKENING (pp. 104, 106 and 134).—The discussion on this subject has been very interesting, and, no doubt, much could be said in favour of many of the views expressed. I consider that a multiplicity of factors is concerned in the reawakening of vegetation from its winter's sleep, if, indeed, it can ever be considered or proved absolutely dormant at any period of the year. We know that arboreal vegetation extends its root system considerably in autumn and early winter, as a result, it may be presumed, of the increased amount of moisture in the soil, its relative warmth, and the presence of a considerable amount of reserve food that has accumulated in the stems and branches during late summer and autumn. I have for many years noted that the buds, especially the flower-buds of Elms and Beeches, continue to increase in size all through the early winter and prior to the end of the year. This also applies in a measure to Peaches, Pears and other fruit trees, which reach the flowering stage later than the Elms. The



FIG. 65.—THE MEXICAN MOLLUSC, *GLANDINA GUTTATA*, DEVOURING A SNAIL.

English Elm in North Surrey and other places adjacent was in full bloom between January 24 and 29, or just a month in advance of the average by the same trees. The same may be said of the Lombardy Poplar, *Populus canadensis* and *P. canescens*, in February. This might be explained as due to the sharp frost we had in November, followed by the unusual mildness and heavy rains of December; but it would be difficult to prove that the early frost was the contributing factor to the month's advance in point of time. If next autumn proved a mild one, without frost till the end of the year, the trees might bloom early, as on this occasion, and thus disprove the thesis advanced. It has long been known to gardeners that exposure to frost makes the crowns of Lily-of-the-Valley respond more readily to the process of forcing, while the stools of Rhubarb and Seakale may be treated in a similar way. The mere act of lifting Rhubarb and leaving the roots lying on the surface for two or three weeks makes them distinctly more easy to force, whether they have been subjected to frost or not. The practice would have the effect of bringing the old growth more quickly to a state of complete maturity, and this in itself might be regarded as a preparatory condition to the resumption of fresh activity by the plant. I have seen *Jasminum nudiflorum* flowering freely on the wall of a house in October, so that frost could not have been the initial factor inducing this precocity. *Primula denticulata* and its varieties from the Himalayas will often develop its umbels of flowers sufficiently in the autumn, upon the rockery, to get them destroyed by moisture and a low temperature later. I have seen similar results due to overwatering them in pots, in a cold frame facing the north. The

factor in this case might be ascribed to an undue amount of moisture at a time when the plants ought to have been induced to go to rest by withholding it. Mild, moist conditions act in a similar way during almost every autumn, upon Primroses and Polyanthes, which bloom intermittently or almost continually till the final endeavour in spring. In 1893 dry weather commenced in March, and continued till June, by which time an avenue of Limes, under my notice, lost all their leaves. They made a second growth, but not a good one, during the course of summer. A heath fire occurred on a common a few years ago, and an avenue of Syamores, with a road between, ran across the middle of the common. The hot air passing through the trees caused many of them to lose all their leaves, and in some cases only the half of a tree was thus affected. The trees resumed growth, and in October were completely covered with foliage, and came into full bloom. To see full grown fruit and old leaves on some, and young foliage and flowers on the majority, was an uncommon sight. Frost had nothing to do with these cases. I believe also that many, if not all plants, respond to a series of stimuli, but in certain cases this is so obvious that it cannot escape the observant. *Euonymus japonicus*, in many forms, makes a series of distinct growths during the course of the year, completing one, as if preparing for winter, and then bursting the buds afresh later on. This goes on in winter as well as summer. *Veronica Blue Gem* blooms in June, July, and often again in August or September, while *V. Autumn Glory* blooms profusely in July, makes a halt, and resumes flowering again, often continuing more or less till Christmas in the counties in and around London. Another garden variety, named *V. elegans variegata*, exhibits intermittent growth, and whereas the variegation is scarcely observable in autumn, it is quite conspicuous at present as the result of young growth made this year in the open air. Something similar to this occurs in the case of Alpine Willows, brought from an elevation of 2,500 ft., and cultivated near sea level. *Salix herbacea* and *S. Lapponum* make two distinct growths during the course of the summer, terminating each cycle of growth with the characteristic bud scales, such as envelop them in winter. *S. Myrsinites* will make two, and occasionally three, of such cycles of growth. The plants at the low elevation bloom two months or more earlier than those on the Highland mountains. The leafy growth succeeds the blossom, except in the case of *S. herbacea*, and I have seen *S. Myrsinites* come into full growth in early April, and get so cut with frost as to take two years to recover. Besides variations in the time of flowering or leafing, induced by bringing alpine plants to lowland levels, and the plurality of cycles of growth within a summer, or a year, it would not be foreign to the subject to mention the artificial creations, such as Hybrid Tea Roses, Hybrid Perpetual or Remontant Roses, perpetual Moss and perpetual Scotch Roses, all of which make two or more distinct growths during the summer, and bloom upon the same. These I look upon as cases of plants making intermittent growths during the summer and autumn, that can seldom occur in the wild state. In the case of Hybrid Tea Roses the repeated growths may be considered due to the influence of *Rosa indica*, or its variety, *fragrans*; but that cannot apply to the others, which must owe their peculiarity to some inherent quality or property possessed by the strain upon which rosarians have been working. I regard them as instances of repeated awakening during the course of a year, so that the factors at work must not only be numerous, but the plants themselves respond differently under what appear to us to be similar conditions. J. F.

THE LATE CANON ELLACOMBE'S GARDENER.

—As one of the older visitors to Bitton, may I beg the favour of space for an appeal on behalf of the late Canon Ellacombe's gardener, Richard Ashmore, who for some time past has suffered from locomotor ataxy, and is consequently unable to take another situation. This appeal would, I believe, be in accordance with the Canon's wishes, for no master was more kind to his gardener, nor did any gardener

ever respond more faithfully by deep interest in the plants his master loved. They worked together, and it was a pleasing incident when I was at Bitton last August that the same bath chair was in the service of both. The late Canon Ellacombe was no ordinary man, nor is the gardener in his knowledge of hardy plants and their names. There was hardly a plant in the great Bitton collection for which Ashmore had not the name ready. Such a man, still comparatively young, would doubtless have secured a fresh post at once but for the state of his health. His friends are hoping to raise a small fund which will relieve him from anxiety in the future. Ashmore was gardener at Bitton for eighteen years. I have known him during the whole of that time, and I make this appeal especially to the many visitors for whom he has packed the plants so generously given by the late Canon. I shall be glad to receive and to forward any contribution that may be sent me. *R. Irwin Lynch, M.A., F.M.S., The Botanic Garden, Cambridge.*

EUCALYPTUS AT STONEFIELD, ARGYLLSHIRE.—I must ask leave to correct an error in my note about these trees. I said that I believed they were *Eucalyptus Gunnii*; and Mr. John Cairns, of Glasgow, writes to inform me that he also considered them to be of that species; but on sending specimens to Kew for identification, he learnt that they were *E. urnigera*. He also gives the dimensions as follows (height not ascertained):—

		Girth at 5 ft.	
No. 1.	<i>E. urnigera</i>	6 ft. 10 in.	30 ft. of clean bole.
No. 2.	"	5 ft. 6 in.	25 "
No. 3.	"	5 ft. 5 in.	19 "
No. 4.	"	4 ft. 6 in.	30 "
No. 5.	<i>E. coccifera</i>	3 ft. 6 in.	18 "

These trees were raised from seed by Mr. Robertson, late gardener at Stonefield, 32 years ago. *Herbert Maxwell, Monroth.*

LEEK BULBS.—The root reproduction of the Leek described by *Western Light* in his interesting note on p. 148, evidently records the natural production of what the old-time gardener termed "Leek Bulbs." For supplying Leek bulbs a sufficiency of extra Leeks should be planted with the ordinary crop, and in the following spring the flower-stems removed as they appear. The result is the formation of a number of small, white bulbs around the roots of each plant. Leek bulbs are delicious when stewed in gravy, and as they are milder in flavour are preferred by many in dishes where Onions and Shallots are generally used. I have never planted Leek bulbs, as I always imagined they would not be so satisfactory as Leeks grown in the customary manner, but *Western Light's* experiment should be interesting. In his case, the precocious flowering of the plants, which, by the way, are biennials, had the same effect on the roots as removing the flower-stems in the early spring, for the energies of the Leeks, not finding the natural outlet in flower production, were diverted. *A. C. Barthol.*

ENEMY ROSES.—Apropos of the note respecting *Rose Prince de Bulgarie* on p. 147, it appears that M. Forestier has solved the question what to do with such names. Were any plan of rechristening adopted we should find ourselves in a hopeless muddle. Already our American friends had christened *Prince de Bulgarie* "Mrs. Taft" before the war commenced. The stupid practice of some market growers naming such a Rose as *Ophelia* "Lady Love" cannot be too strongly condemned, and some British Rose growers have descended to the childish action of calling *Frau Karl Druschki* "Snow Queen" and *Tausend-schon* "Thousand Beauties." I was recently asked to give a friend a list of German-raised Roses, and was surprised to find it totalled up to some 120 varieties. To re-christen all these would be positively confusing. If we do not care that *Prince de Bulgarie* should sully our gardens, let us plant *Madame Edmond Rostand*, a superior Rose, and if *Frau Karl Druschki* offends, we can have *Candeur Lyonnaise*, a more superb variety, and minus the dead whiteness many object to in *Druschki*. *Kaiserin Augusta Victoria* can well

be replaced by *Entente Cordiale*, a superb variety worth growing for its delicious fragrance alone, and so I could keep on suggesting better varieties for most of the enemy productions. Then do not let us confuse our catalogues by changing names, but see to it we do not find space in them for Hun productions in the future. *Experience.*

BIRDS AND MUSTARD SEED (see p. 148).—Like A. N., I used to be under the impression that birds had no particular liking for Mustard seed, but a few weeks ago I noticed a proportion in a packet of cage bird seed, so I watched the canary, and, to my surprise, saw that he ate it, after having first industriously sorted out the few grains of Hemp, which he prefers to all other seed. *C.*

GRAPE COOPER'S BLACK.—In reply to O. T. and E. M., I may say that an accurate account of the origin of this Grape appeared in the gardening press about a couple of years ago. It was, briefly, that Cooper's late black Grape was raised and exhibited by a Mr. Cooper, at one time gardener to the Marquis of Downshire, Hillsborough Castle, Co. Down. *J. Leicester.*

SAXIFRAGA BOYDII ALBA.—In "Notes from a Cotswold Garden" (see p. 133), Mr. H. J. Elwes mentions *Saxifraga Boydii alba* as being a "white species or hybrid"; and further remarks that neither Mr. Boyd nor Mr. Ingram could inform him as to its origin. The origin of this plant has always been more or less obscure, though the not unnatural inference from the name is that it is a variety of *S. Boydii*. The two are, however, distinct in many ways—notably in vigour, habit of growth, and flowering. Hence the name is not a little confusing. It might interest Mr. Elwes, if he has not already done so, to turn up the late Mr. Dewar's account of *S. Boydii*, which accompanies the coloured plate published in *The Garden*, of July 5, 1890. It will be seen from these notes that Mr. Boyd originally regarded *Burseriana* and *Rocheliana* as the parents of the yellow variety which bears his name, and that it was not until the plant flowered at Kew that the now accepted parentage, *Burseriana* x *aretioides*, was suggested. This was several years subsequent to the first appearance of the seedling, and while proof of the influence of such a cross is not wanting, it could only be possible with either a very late-flowering *Burseriana*, such as *macrantha*, or an early-flowering *aretioides*. Referring to the subject of this note, Mr. Dewar remarks that it is "undoubtedly of the same parentage, but with more of *Burseriana* blood than of *aretioides*," a statement entirely at variance with the facts, there being absolutely no external evidence of the influence of either of these in *S. Boydii alba*. To refer again to Mr. Boyd's original idea that the yellow *Boydii* originated from *Burseriana* and *Rocheliana* it is conceivable that such a combination might give rise to so good and distinct a plant as *S. Boydii alba*. Indeed, in my opinion, there is abundant proof of it, not only in the individual flower, and in the flower clusters, but in the attributes of vigour and freedom which render it one of the most desirable of white-flowered sorts. In habit of growth it is practically intermediate between the two, the grey, pointed leaves of the rosettes suggesting *Burseriana* influence, their size and spread *Rocheliana*, or its variety, *Coriophylla*. *E. H. Jenkins.*

NOMENCLATURE. Lately something "new" has been put forward under the name "Celery Cabbage." So far as one can judge this seems to be merely *Pé Tsai*, Chinese or Shantung Cabbage. If so, why should a new name be accorded to it; and such an extraordinarily bad one too? Neither in appearance, in growth, in flavour, nor in use, has it any resemblance to Celery. If the cult of *Pé Tsai* goes back the thousand or two years that one associates with Chinese civilisation, the old name would appear to have a reasonable priority of a few centuries. Another member of the Cabbage tribe which now we call *Chou rave*, instead of *Kohl Rabi*, might just as aptly be rechristened "Celery Cabbage." *H. E. D.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

MARCH 7.—*Present*: Mr. E. A. Bowles, M.A., F.L.S., F.E.S. (in the chair); Sir John T. D. Llewellyn, Sir Everard im Thurn, Messrs. Holmes, Fraser, Worsdell, Horne, Ramsbottom, Hales, Elwes and Chittenden (hon. sec.).

Fasciation, etc., reproduced by seed. Mr. J. FRASER showed some fasciated stems of *Cineraria* to illustrate the condition of about 50 per cent. of a batch of seedlings of the stellata type of *Cineraria*. He also remarked upon a number of *Violas* having from two to five spurs having occurred in a batch of seedlings.

Fasciated plants. Fasciated specimens of *Polemonium coeruleum*, *Euonymus japonicus*, *Cotoneaster microphylla*, *Prunus Mahaleb* and *Spiraea Douglasii* were shown from various sources. The latter, which came from Camberwell Park, was one of a number of specimens which had occurred there.

A point-destroying fungus. Mr. RAMSBOTTOM exhibited some pieces of wood which had been painted white and placed in a greenhouse at the Chelsea Physic Garden, on which a pink fungus, *Phoma pigmentifera*, had appeared in full fructification within five weeks. The fungus has been recently described by Mr. Massee.

SHOW OF FORCED BULBS.

MARCH 14-15.—A special competitive show of forced bulbs was held on Tuesday and Wednesday last in the Vincent Square Hall, Westminster, prizes in five classes being offered by Mr. G. H. van Waveren, of Hillegom, Holland. Exhibits of other flowers were invited, and the Floral and Narcissus Committees sat to adjudicate on novelties, and award medals for collections. The result was that the meeting became very like one of the fortnightly functions, minus the Orchids. There was a lecture at 3 p.m., when Mr. BOWLES was the speaker, taking *Crocuses* as his subject.

The bulb classes did not attract many exhibitors. In other respects the meeting was the most successful held for a long time, the attendance being almost as in pre-war times.

The Floral Committee made no award to a novelty, but in this section 19 medals were awarded for collections.

The Narcissus Committee recommended two Awards of Merit to *Narcissi* and four medals for collections.

MESSRS. SUTTON AND SONS, Reading, were awarded a Silver Knightian Medal for vegetables.

Floral Committee.

Present: Mr. H. B. May (Chairman), Messrs. J. W. Barr, G. Reuthe, A. G. Jackson, C. R. Fielder, J. W. Moorman, G. Harrow, T. Stevenson, J. E. McLeod, W. H. Page, C. Dixon, R. Hooper Pearson, W. Cuthbertson, W. P. Thomson, E. H. Jenkins, H. Cowley, J. Hudson, and W. Howe.

The following medals were awarded for groups:—

Gold Medal to Messrs. R. and G. CUTBERT, Southgate, for Hyacinths. This group of splendidly grown plants was the largest exhibit. Enclosed by three rows of *La Victoire* (red), *Correggio* (white), and *Grand Maître* (blue), were circular groups of distinct colours, in severely formal style.

Silver-Gilt Banksian Medal to Messrs. J. CARTER and Co., Raynes Park, for a spring garden in good taste. The motif was a sward jewelled with *Crocuses*, the turf and flowers being as fresh and natural-looking as though transported bodily from some garden. At the back and sides was a hedge of dark green Box, with a border of *Hellebores*, golden *Crocuses*, and *Anemone blanda*. Sheets of pink *Ericas*, broken by dwarf golden *Euonymus*, met the grass at the sides. Messrs. DOBBIE and Co., Edinburgh, for

Crocuses. The numerous varieties were in large blocks of oblong shape, a striking way of displaying their characteristics, but not so artistic as the smaller bowls and vases that were employed along the front of the group. The more striking varieties were Ovidius, Mikado, White Lady, Julie Culp, Caroline Chesholm, Mnie, Melba, and Snow White. Messrs. BARR AND SONS, King Street, Covent Garden, for Crocuses, Hyacinths, Irises, Narcissus, Fritillarias, and other spring flowers. Amongst many beautiful Crocuses we noticed *C. pulvis*, a beautifully formed flower, striped all over with violet on a white ground, and Kathleen Parlow, the *dogeant* of white Crocuses. Messrs. M. GLEESON AND CO., High Street, Watford, for frilled Cyclamens. The plants were compact, robust, very free in flowering, and of great variety and beautiful colours, the frilling being a constant characteristic. Messrs. J. PIPER AND SONS, Bayswater, for rare and choice trees in pots and Alpines. The most interesting trees were the blue-grey *Juniperus pachyphylla* elegantissima, *Corokia cotoneaster*, with dichotomous, spiny growth, *Osmanthus armata*, with handsome leaves like those of a Holly, and *Rubus Veitchii*. Mr. G. PRINCE, Oxford, for Roses, and Mr. G. REUTHER, Keston, for hardy plants and flowering shrubs.

Silver Banksian Medals to Messrs. W. CUTLUSH AND SON, Highgate, for forced flowering shrubs and Alpines; Mr. ELSHA HICKS, Twyford, for Roses; Messrs. H. B. MAY AND SONS, Edmonton, for Cinerarias, Clematis, *Boronia megastigma*, and fine Cyclamens in a setting of exotic Ferns; Mr. AMOS PERRY, Enfield, for *Shortia uniflora grandiflora*, as at the last meeting, the effect on this occasion being enhanced by the use of large, hardy Ferns; Messrs. T. S. WARE, LTD., Feltham, for hardy plants, including the rosy-lilac flowered *Primula frondosa*, *Anemone fulgens Suttonii*, with a yellow base to the intense scarlet cup, *Trillium sessile rubrum*, and a beautiful seedling mauve Auricula; and Messrs. WATERER, SONS AND CRISP, LTD., Twyford, for a rockery.

Bronze Banksian Medals to Messrs. BAKER, LTD., Wolverhampton, for hardy plants; Miss PIXON, Edenbridge, for Polyanthus and Auriculas; Mr. CLARENCE ELLIOTT, Stevenage, for Saxifragas in pots; Mr. W. MILLER, Wisbech, for hardy flowers, including bulbs, the exhibit, as usual by this grower, containing useful subjects shown at their best; and Messrs. R. F. FELTON AND SONS, Hanover Square, for plants from the South of France, arranged for decorative effect.

Narcissus Committee.

President—Mr. E. A. Bowles (in the chair). Messrs. H. Smith, G. Renthe, C. Bourne, F. Herbert Chapman, W. Ponnart, J. Jacob, J. Hudson, J. Duncan Pearson, G. W. Leek, and Chas. H. Curtis.

AWARDS OF MERIT.

Narcissus Pippin (Princess Mary B. Chancery).—This variety belongs to the Barri section, the award being made for its suitability for pot cultivation. The blooms are of medium size, and well formed; the perianth is cream-coloured, the chalice rich, glowing orange-red and about 1 inch wide, the colour staining it to the base. Shown by Messrs. H. CHAPMAN, LTD.

N. Sparkler.—An incomparabilis variety, with rich yellow perianth and orange-scarlet crown. It is a robust grower, suitable for market purposes or supplying cut blooms, the award being made for these qualities. Shown by Messrs. BARR AND SONS.

Groups.

The following medals were awarded for collections—

Silver Gilt Banksian Medals to Messrs. R. H. BATH, LTD., Wisbech, for spring flowers in bowls of moss-fibre. Besides different kinds of bulbous flowers, there were handsome bowls of Fritillarias (see fig. 66), principally *F. Melegris*. These flowers make a pleasing change from those usually employed for this method: blue flowered Primroses were also shown well in this way; Messrs. BARR AND SONS, King Street, Covent Garden, for Daffodils, including many new seedlings

shown under their pedigree numbers; and Messrs. J. R. PEARSON AND SONS, Lowdham, Nottinghamshire, for Daffodils, such as Great Warley, Mrs. H. J. Veitch, Mrs. R. Sydenham, Florence Pearson, and Heroine.

Bronze Banksian Medal to Messrs. R. SYDENHAM, LTD., Birmingham, for Daffodils and other bulbs in fancy bowls and pots.

Messrs. SUTTON AND SONS, Reading, showed remarkably good vegetables as a very attractively staged exhibit. Coloured Kales formed a suitable centre-piece, and there were uncommonly good Cauliflowers of the Snow-white variety; appetising Lettuces of the Golden Ball sort; Cucumbers Sutton's Market; young, crisp Radishes; well-blanching Chicory Endive and Seakale, and nice little heads of Harbinger Cabbage. (*Silver Knightian Medal*.)

COMPETITIVE BULB CLASSES.

There were five classes, and they were all for Hyacinths. The best competition was in the class for 24 plants in eighteen distinct varieties, which attracted three exhibitors. The DUKE OF



FIG. 66.—FRITILLARIAS IN VASE CONTAINING MOSS-FIBRE.

PORTLAND, Welbeck Abbey, Worksop (gr. Mr. J. Gibson), excelled easily with splendidly-flowered plants of such varieties as Enchantress (pale blue), Grand Maître (opul blue), Hofgarten Kunst (pale sulphur), King of the Blues, Moreno (bright pink), La Victoire (rose-crimson), Correggia (white), and Jacques (coral-pink); 2nd, E. G. MORRISON, Esq., Victoria Park, Wavertree (gr. Mr. E. Rippe); 3rd, the MARQUIS OF RIPON, Coombe Court, Kingston Hall (gr. Mr. T. Smith).

Mr. WILLIAM JOYCE, Wavertree (gr. Mr. A. Hitcham), was the only exhibitor in the class for 12 varieties, distinct, and was awarded the 1st prize.

Mr. J. HASLAM, Worksop, had the better of two exhibits in the smaller class for 6 varieties, receiving the 1st prize, and Mr. T. CROMPTON, Wavertree (gr. Mr. J. Gilston), the 2nd.

The DUKE OF PORTLAND won both the 1st prizes and the MARQUIS OF RIPON the 2nd prizes in the classes for 6 pans of Hyacinths, and a decorative display of Hyacinths.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 2.—*Committee present*: Rev. J. Crombholme (in the chair), Messrs. R. Ashworth, J. C. Cowan, J. Evans, P. Foster, A. R. Handley, A. J. Keeling, D. McLeod, W. Shackleton, S. Swift, G. Weatherby and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum plumtonense var. "*Mojestic*" (Lambeaunum × amabile), a large flower of excellent form, the colour being crimson-purple, the slightly darker lip having a yellow crest; *O. Clyt albens* (Edwardii × Pescatorei), a large, well-shaped flower, differing from the usual purple type in having a ground of French grey; the large lip is spotted with purple. Both from RD. ASHWORTH, Esq.

Cattleya Trianae var. "*Sunrise*" and *Laelia-Cattleya Nellthorpe Brauckerk "Haddon House"* var. (L.-C. Gottiolana × C. Enid), a large flower, with well-fringed lip. Both from P. SMITH, Esq.

Cypripedium Tom Worsley (Actaeus langleyense × Helen H.), the dorsal-sepal is porcelain-white lightly spotted; *C. Commodore* (Alcibiades × Memoria Jerninghamae), the broad white dorsal sepal has a broad maroon line up the centre. Both from TOM WORSLEY, Esq.

AWARDS OF MERIT.

Odontoglossum princeps "*Walton Grange*" var. (crispum × Lawrenceanum), *O. eximium Perfection*, and *O. Moonbeam*; all shown by WM. THOMPSON, Esq.

O. eximium var. "*Purple Gem*" and *O. crispum* var. "*Haddon Glory*," both from P. SMITH, Esq.

Cypripedium Alcibiades nobilior, and *C. Carteri*, both from TOM WORSLEY, Esq.

Cattleya Schroderae var. "*Rosendale*," from RD. ASHWORTH, Esq.

Odontoglossum crispum var. "*Dingle*," from P. HOUGHTON, Esq.

O. × Arthur (parentage unknown), from The Hon. ROBERT JAMES.

CULTURAL CERTIFICATES.

To Mr. W. GILDEN, gr. to RD. ASHWORTH, Esq., for a plant of *Odontoglossum Aspersum*, with 15 flowers on a branched spike; to Mr. J. HOWES, gr. to WM. THOMPSON, Esq., for plants of *Dendrobium Wardianum*, in small pots, each carrying large trusses of bloom. *Cypripedium* Wm. Rees (Hitchensae × Milo), exhibited by TOM WORSLEY, Esq., which gained an Award of Merit at the meeting on January 6, will be recorded as *C. Euphrates* var. "*Wm. Rees*."

GROUPS.

Large Silver Medals were awarded to R. ASHWORTH, Esq., Newchurch (gr. Mr. W. Gilden); WM. THOMPSON, Esq., Stone (gr. Mr. J. Howes); and TOM WORSLEY, Esq., Haslingden (gr. Mr. T. Wood); and a *Bronze Medal* to Messrs. A. J. KEELING AND SONS, Bradford.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

MARCH 13.—The annual general meeting of this society was held in the Royal Horticultural Hall, Westminster, on Monday last. Mr. Chas. H. Curtis presided.

The reports, embracing the activities of the sections known as the Private and the State, were unanimously adopted. In proposing the adoption of the committee's report, Mr. Curtis explained that he had, at the request of the committee, obtained information with the object of writing the Jubilee Souvenir, which, as was suggested in the report for 1914, the committee hoped to have presented to the members. But its publication has been deferred until happier times.

The total membership is 1,733. The committee deeply regretted to record the deaths of twenty members during the year; this number included two who lost their lives in the war, and Mr. J. H. Heale, who acted as secretary for a short period.

During the past year the trustees have vested £2,200 in War Loan, and the treasurer's statement showed the finances of the society to be in a very satisfactory condition.

The meeting then proceeded to elect officers and committee. The former were re-elected, and a special tribute was paid to the work of the secretary, Mr. A. C. Hill. Messrs. C. F. Harding, F. Oxtoby, and D. Campbell were re-elected members of the committee, and Mr. E. J. Allard was elected in place of Mr. Wilson, who has resigned, and Mr. T. R. Butler in the place of Mr. G. Butcher, who has attested under the Derby scheme.

The following alterations to the rules were made:—

Rule 5, paragraph 1, in eighth line after the word "act," add the following:—"And shall receive such annual remuneration for his services as the members shall determine at their annual general meeting."

Rule 16, paragraph 6, in the last line after the word "condition" add the following:—"If a member contributing under Part 2 of these Rules ceases to be an insured person, he may, with the consent of the committee, be allowed to transfer to Scale A, provided he had contributed to that scale previous to his becoming an insured person, but will not be eligible for the extra benefits until he has contributed to the higher scale for twelve months (as per Rule 17)."

Rule 16.—"A member who has joined H.M. Forces for the war and whose contributions have fallen twelve months in arrear shall not be considered to have left the society, but such member shall not be entitled to benefits while serving in H.M. Forces should his contributions be in arrear as per Rule 16, paragraph 8. On discharge from H.M. Forces a member whose contributions are in arrear shall be entitled to continue membership under his former scale without a medical certificate (the part of Rule 16, paragraph 8, that refers to a medical certificate being suspended in his favour), and the general rules will at once apply to him. He will not be entitled to benefits until he has either paid off his arrears of contributions, or paid his contributions for twelve calendar months."

With reference to the amendment of Rule 16, Mr. John Williams, who came from Worcester for the purpose, spoke at considerable length on the injustice which he and some other members felt had been done them by the compulsory transfer from Scale A when the society became an approved society for the purposes of the National Health Insurance. The chairman assured Mr. Williams that the matter had received the consideration of the committee, but the advice of the actuary prevented any present recommendation to alter the rule, though further information was being requested from the members concerned, and it was hoped that this would be of a nature to induce the actuary to give a more favourable report.

SCOTTISH FRUIT TRADE.

MARCH 9.—The annual meeting of the Scottish Fruit Trade Association was held in Glasgow on the 9th inst. There was a good attendance, and the meeting was presided over by Mr. Alexander McKay. The report of the committee was of a satisfactory nature, and its adoption was moved by the chairman, who, in the course of his speech, referred to the announcement regarding restrictions on the importation of fruit. The motion to adopt the report was seconded by Mr. Joseph Sproat, and agreed to. The following office-bearers were appointed:—President, Mr. John Chalmers; vice-president, Mr. John McDonald; honorary treasurer, Mr. John Kennedy; secretary, Mr. D. Gardner.

DEBATING SOCIETIES

BRISTOL AND DISTRICT GARDENERS'.—The usual fortnightly meeting of this association was held on Thursday, the 9th inst., Mr. H. Woodward presiding. The appointed lecturer was unable to attend, and the evening was devoted to a debate on "Peach Culture." Messrs. Ayres, Elkes and Curtis opened the subject, which resulted in a useful and interesting discussion. The prizes offered by Messrs. Mansell & Hatcher, Ltd., Leeds, for two Orchids were won by Mr. Jennings (1st) and Mr. Curtis (2nd).

READING AND DISTRICT GARDENERS'.—At the meeting held on Monday, the 13th inst., Mr. W. J. Townsend, who for many years was in charge of the gardens at Sandhurst Lodge, gave a lecture on "The Flower Garden," illustrated by a series of more than 100 lantern slides showing groups of bulbous flowering plants, hardy flowering shrubs, Roses, plants in the bog and woodland gardens and Lilies in ponds.

MARKETS.

COVENT GARDEN, March 15

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices decrease.

Cut Flowers, &c. Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Azalea, white, per doz. bun.	4 0	5 0	Orchids—		
Camellias, white, per doz.	2 6	3 0	— Odontoglossum crispum	4 0	5 0
Carnations, per doz. blooms, best American varieties	1 6	2 6	— Pelargonium, per doz. bunches, double scarlet	4 0	6 0
— smaller, per doz. bunches	—	—	— Primroses, per doz. bun.	2 0	—
— Carola (crimson), ex. large	3 0	3 6	— Richardias (Arums), per doz.	4 0	5 0
— Malmesbury, per dozen blooms	—	—	— Roses, per dozen blooms—		
— pink	10 0	15 0	— Duchess of Wellington	—	—
Daffodils, per doz. bunches	—	—	— Lady Hillingdon	2 0	3 0
— Double Van Zien	2 0	2 6	— Liberty	4 0	7 0
— Emperor	4 0	5 0	— Madame A. Chateau	4 6	5 0
— Empress	3 0	3 6	— Melody	—	—
— Golden Spur	2 6	3 0	— Mrs. Russell	—	—
— Princeps	2 0	2 6	— My Maryland	—	—
— Sir Watkin	2 0	2 6	— Niphetos	3 0	3 6
— Victoria	4 6	5 0	— Ophelia	6 0	8 0
Eucharis, per doz.	2 0	2 6	— Prince de Bulgarie	—	—
Freesia, white, per doz. bun.	1 0	1 6	— Richmond	4 6	7 0
Gardenias, per box of 15 and 18 blooms	4 0	5 0	— Sunburst	4 0	6 0
Iris Spanish, per doz. blooms	—	—	— White Crawford	2 6	1 0
— white	2 6	2 9	Spiraea, white, per doz. bun.	8 0	9 0
— blue	2 6	3 0	Stock, double white, per doz. bunches	—	—
— mauve	2 6	3 0	Tuberose, per packet, 24 blooms	—	—
Lapageria, per doz. blooms	—	—	Tulips Darwin, mauve, per doz. blooms	1 6	1 9
Lilac, white, per doz. sprays	4 0	5 0	— red or pink variety, per doz. blooms	1 6	2 0
Lilium longiflorum, per doz. long	3 6	4 0	— single, white, per doz. bunches	10 0	12 0
— short	3 6	4 0	— coloured, per doz. bun.	8 0	10 0
— lancifolium album, long	2 0	2 6	— red, per doz. bun.	10 0	12 0
— lancifolium rubrum, per doz. long	1 6	2 0	— pink, per doz. bun.	12 0	15 0
— short	1 6	—	Violets, per doz. bunches	1 6	2 0
Lily of the Valley, per dozen bunches	24 0	—	— double, Marie Louise, per doz. bun.	4 0	6 0
— extra special	15 0	18 0	— Princess of Wales	3 0	4 0
— special	—	—	White Heather, per doz. bun.	1 0	—
— ordinary	—	—			
Narcissus, carnatus, per doz. bunches	2 6	3 6	French and Guernsey Flowers.		
Orchids, per doz.	12 0	15 0	Anemone, double pink, per doz. bun.	1 6	2 0
— Cattleya	2 0	3 6	— de Caen, mix., per doz. bun.	2 6	3 0
— Cypripedium	1 6	2 0	— mauve, per doz. bun.	2 0	2 6
— Dendrobium	1 6	2 0	Marguerites, yellow, per doz. bunches	1 6	2 0
			Narcissus, Grand Primo, per doz. bun.	2 6	3 0
			— carnatus	2 0	2 6

Cut Foliage, &c. Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches	7 0	8 0	Fern, French, per doz. bunches	0 6	0 8
Agrostis (Fairy Grass), per doz. bunches	2 0	4 0	— common	4 0	5 0
Asparagus plumosus, long trails, per half dozen	1 6	2 0	Galax leaves, green, per doz. bunches	—	—
— medium, per doz. bunches	12 0	18 0	Hardy foliage, various, per doz. bun.	4 0	8 0
— Sprengeri	8 0	12 0	Honesty, per doz. bunches	10 0	12 0
Berberis, per doz. bun.	4 0	5 0	Lichen Moss, per doz. boxes	15 0	18 0
Carnation foliage, per doz. bunches	4 0	5 0	Moss, gross bunches	7 0	8 0
Croton foliage, per doz. bunches	12 0	15 0	Myrtle, doz. bun. English, small-leaved	6 0	—
Cycas leaves, per doz.	5 0	12 0	— French, per doz. bunches	1 0	1 3
Eulalia japonica, per bunch	—	—	Smilax, per bun. of 6 trails	1 0	1 3

REMARKS.—After a week or more of short supplies and high prices for practically all flowers, prices now

are falling. This is most noticeable in the case of Tulips, which are in good supply and Arums (Richardias) for which better prices were obtained last week. Best English Daffodils, such as Emperor, Empress, Hon. Fielder and Victoria, are fetching high prices. Tulips, except Darwins, are less plentiful, the supply of White La Reine variety being soon cleared. Amongst coloured Darwins, the pale and the pale pink variety, Clara Butt, among Rose varieties Richmond and Lady Hillingdon are most plentiful. White Niphetos and White Crawford are also obtainable, and these white varieties are in demand by florists.

Plants in Pots, &c. Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Aralia Sieboldii, dozen	4 0	6 0	Ferns in 32's, per doz.	10 0	18 0
Araucaria, ex-celsa, per doz.	18 0	21 0	— choice	8 0	12 0
Asparagus plumosus nanus, per doz.	10 0	12 0	Ficus repens, 48's, per doz.	4 6	5 0
— Sprengeri	6 0	8 0	— 60's, per doz.	3 0	3 6
Aspidistra, per doz. green	21 0	30 0	Genistas, 48's, per doz.	10 0	12 0
— Variegated	30 0	60 0	Geonoma gracilis, 60's, per doz.	6 0	8 0
Azalea, each	2 6	3 6	— larger, each	2 6	7 6
Boroni, Mogistima, 48's, per doz.	18 0	21 0	Grevillea, 48's, per doz.	—	—
Cacti, various, per tray of 15's	4 0	—	Hyacinths, white and coloured, 48's, per doz.	10 0	12 0
— tray of 12's	5 0	—	Kentia Belmoreana, per doz.	4 0	8 0
Cinerarias, 48's, per doz.	9 0	10 0	— Forsteriana, 60's, per doz.	4 0	8 0
Cocos Weddelliana, 48's, per doz.	18 0	30 0	— larger, per doz.	18 0	36 0
— 60's, per doz.	8 0	12 0	Latania borbonica, per doz.	12 0	30 0
Croton, per doz.	18 0	30 0	Lilium longiflorum, per doz.	24 0	30 0
Cyclamen, per doz.	10 0	12 0	Marguerites, in 48's, per doz.	7 0	8 0
Daffodils, 48's, per doz.	8 0	10 0	Pandanus Veitchii, per doz.	36 0	48 0
Dracaena, green, per doz.	—	—	Phoenix, rupicola, each	12 6	21 0
Erica, white, 48's, per doz.	18 0	21 0	Spiraea, white, per doz.	10 0	12 0
— 60's, per doz.	12 0	15 0	— pink, per doz.	—	—
— 72's, per doz.	12 0	15 0	Tulips, scarlet, on bulbs, per doz.	1 3	1 6
Ferns in thumbs, per 100	8 0	12 0	— white, on bulbs, per doz.	1 6	—
— per 100, in small and large 60's	12 0	20 0			
— in 48's, per doz.	5 0	6 0			

REMARKS.—Trade is very quiet. Good plants of White and pink Hydrangea, pink Erica Willmoriaeana, Genista and Arums are offered. There is nothing specially attractive in the large plants. Many stands in this department are empty.

Fruit Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Apples—			Grapes: English,		
— Albemarle, per barrel	44 0	45 0	— black, per lb.	2 6	4 6
— English cooking, per bus.	6 6	8 6	— Almeria, per brl. of 60 lbs.	28 0	30 0
— Nova Scotian, per barrel	20 0	32 0	— Cape, per 100 lb. box	8 0	10 0
— Oregon, per box	14 6	16 0	Lemons, per case	11 0	21 0
Bananas, bunch—			Lyehees, per box	1 4	1 6
— Medium	7 6	10 0	Melons, Cape	1 6	2 0
— X-medium	9 0	12 0	Nectarines, Cape, per box	6 0	8 0
— Extra	10 6	14 0	Nuts, Brazils, new, per cwt.	54 0	58 0
— Double X	12 0	16 0	— Coconut, per 100	22 0	—
— Giant	15 0	16 0	Oranges, per case	12 6	42 0
— Red, per ton	£20 0	—	— Californian Seedless, per case	22 0	23 0
— Jamaica, per ton	£16 0	—	— Palermo Bitters, per case	15 0	16 6
Chestnuts—			— Peaches, Cape	4 0	10 0
— Italian, per bag	20 0	—	Pears, per case	24 0	26 0
Cranberries, per case	10 0	11 0	— Cape	3 0	5 0
Dates, per doz. boxes	4 3	4 6	Plums, Cape	4 0	8 0
Grape Fruit, per case	18 0	20 0	Strawberries, forced, per lb.	8 0	15 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Artichokes, Globe, per doz.	1 6	3 0	French Beans Dwf. (France), per packet	1 3	1 6
— Jerusalem, per bus.	2 6	—	— Beans (Guernsey), per lb.	1 6	—
Asparagus, Paris green	2 3	2 9	Garlic, per lb.	0 10	1 0
Aubergines, per doz.	—	—	Greens, per bag	3 0	5 0
Beetroot, per bag	4 6	—	Herbs, per doz. bun.	2 0	6 0
Beans, Broad, per pad (France)	5 6	6 6	Horseradish, per bundle	3 0	4 0
— Madeira	6 6	8 6	Leeks, per doz.	2 6	3 6
Broccoli, Sprouting, per lb.	2 0	—	Lettuce, Cabbage and Cos, per doz.	1 0	6 0
Brussels Sprouts, per 4 bus.	6 0	—	Mushrooms, per lb.	1 3	1 6
Cabbage, per tally	3 0	6 0	— Buttons	1 6	1 9
Carrots, per cwt.	14 0	—	Mustard and Cress, per doz. punnets	1 0	—
Cauliflowers, per tally	8 0	16 0	Onions, English, per cwt.	23 0	30 0
Celeriac, per doz.	4 0	—			
Celery, per fan	1 0	1 6			
Chicory, per lb.	0 4	0 6			
Cucumbers, per doz.	4 0	6 0			

Vegetables: Average Wholesale Prices—continued.

	s.d. s.d.		s.d. s.d.
Onions, spring, per doz. bun.	6 0 —	Savoy, per tally	5 0-7 0
— Valencia, per case	27 0-28 0	Seakale, per doz. punnets	18 0-20 0
Parsnips, per bag	3 0 —	Scotch Kale, per bush	1 6 — 1
Peas, per pad (France)	5 0-9 0	Shallots, per lb.	0 9-1 0
Potatoes		Spinach, per bus.	5 0 —
— Channel Islands, per lb.	0 3-0 3 1/2	Tomatoes:	
Radishes, per doz. bun.	0 10-2 0	— Teneriffe, per bundle	10 0-15 0
Rhubarb, Forced, per doz.	0 9-1 3	Turnips, per cw.	5 6 —
— natural, per doz.	2 6 —	Turnip Tops, per bag	3 0 —
		Watercress, per doz.	0 8 —

REMARKS.—English Apples, notably Newton Wonder and Bramley's Seedling, are obtainable. Boxed and barrelled Apples from abroad are not plentiful, but the best varieties are Albemarle Pippin from the Western States and Oregon Hood River. Among Pears, Californian Winter Nels are still obtainable. A number of varieties are arriving from the Cape, among others Beurré Hardy, Williams' Bon Chrétien, Louise Bonne de Jersey, Beurré Superfin and Beurré Bosc. The last shipment of Cape fruits also included about 37,000 packages of Grapes, Peaches, Plums, Nectarines, Pineapples and other fruits. English Grapes continue to arrive in fair quantities, considering the time of year. The new season's crop of Brazil nuts has arrived. English Cucumbers are being received in large quantities, and Mushrooms continue fairly plentiful. Asparagus, both English and French, is available in increasing quantities. Good saleable specimens of Teneriffe Tomatoes are difficult to obtain; Onions and Carrots are scarce, and their prices are exceptionally high. Supplies of Seakale are also limited, and this vegetable is in consequence dear, but in general outdoor vegetables are fairly plentiful for the time of year. — E. H. R., *Current Garden Market*, March 15, 1916.

Potatoes.

	s.d. s.d.		s.d. s.d.
Bedford—		Lincoln—	
King Edward..	4 9-5 3	Eclipse..	4 6-4 9
Blackland ..	4 0-4 6	Evergood ..	4 0-4 6
Dunbar ..	6 6-7 0	King Edward..	4 8-5 6
Kent—		Queen ..	4 6-5 3
Eclipse..	4 6-5 0	Scotch—	
King Edward..	5 0-5 9	King Edward..	4 9-5 6
Queen ..	4 9-5 3		

REMARKS.—Trade in best quality tubers has improved, and their prices have advanced a little. There is not a large demand for tubers of medium and poor quality. The consignments from growers are small. *Edward J. Newbourn Current Garden and St. Pancras*, March 15, 1916.

GARDENING APPOINTMENTS.

- Mr. F. Fuller for the past 2 years Gardener to Miss Pridmore, The Grove, Croydon Green, Hertfordshire, as Gardener to C. M. Jagers, Esq., Old Rectory House, Wimbledon Park.
- Mr. J. Henley, Bletchley Park, Buckinghamshire, as Gardener to R. W. Kaye, Esq., Great Glenn Manor, Leicester. [Thanks for 1s. for R.G.O.F. box.—Ed.]
- Mr. E. G. Hales, for the past three years Gardener to W. S. Stacy, Esq., Drayton House, West Drayton, Middlesex, as Gardener to S. A. Worskett, Esq., Oakland, Chislehurst, Kent. [Thanks for 2s. for R.G.O.F. box.—Ed.]
- Mr. W. Guttridge, Gardener to the late Mr. McLean, Black Down, Woking, as Gardener to Mrs. Boulton, St. Anne's Cottage, Chertsey.
- Mr. E. E. Carr, late of Elvedon Gardens, as Gardener to Heath Harrison, Esq., Lee Court, Liss, Hampshire.
- Mr. W. Griffiths, Shortlands, Kent, as Gardener to R. B. Chessum, Esq., Woodbury, Clay Hill, Enfield.
- Mr. E. W. Barker, previously Gardener to Major Robinson, Penbryn, Mold, and W. T. Fennell, Esq., Milgate Park, Maidstone, as Gardener to A. Percy Eccles, Esq., at Cuddy Manor, West Kirby.
- Mr. J. I. Sharp, for the past two years and eleven months Gardener to Capt. Wm. Gibbs, Belchamp Hall, Sudbury, Suffolk, as Gardener to Major Chas. Leveson-Gower, Titsey Place, Lymington, Solihy.

SCHEDULES RECEIVED.

Royal Agricultural Society's Show, at Manchester, Tuesday, June 27, to Saturday, July 1, 1916.

CATALOGUES RECEIVED.

SEEDS.

- CHARLES TURNER, Slough.
- TELFORDS, 6, London Road, Brighton.
- W. DREMMOND AND SONS, LTD., Stirling and Dublin.
- DOUGLAS AND SONS, 22, Oak Street, Manchester.
- WATKINS & SIMPSON, 12, Tavistock Street, London, W.C.
- MORRISON & CO., 150-156, Finchley Road, London, N.W.
- THOMPSON AND MORGAN, Hardy Plant Nurseries, Ipswich.
- COOPER, TABER AND CO., LTD., 90-92, Southwark Street, London, S.E.
- JOHN WATKINS, SONS AND CRISP, LTD., Bagshot, Surrey.
- E. P. DIXON & SONS, LTD., Hull.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending March 15.

The coldest night for twelve months.—This was another cold week, and the third cold week in succession. There was only one unseasonably warm day, and that was on the 11th inst., when the temperature in the thermometer-screen rose to 52°. On the coldest night, that of the 9th inst., the exposed thermometer registered 15° of frost—the greatest cold recorded here for twelve months, or since the end of February, 1915. The ground is at the present time 2° colder than is seasonable, both at one and two feet deep. Rain fell on two days, shed on one day, and snow on two days. The total measurement of melted snow and rain amounted to nearly 3 inches. On the 8th inst. the snow was at one time 2½ inches deep, on the 9th inst. 2½ inches deep, and on the 11th inst. 2 inches deep. Snow fell here on all but five days of the last three weeks. During the week five gallons of rain and melted snow came through both the bare and turfed soil percolation gauges. The sun shone on an average for 1 hour 9 minutes a day, which is 2 hours 27 minutes a day short of the average daily duration for the time of year. Light airs and calms alone prevailed during the week. The mean amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 12 per cent. E. M.

Obituary.

DR. HECKEL.—The death of Dr. Heckel, of Marseilles, for many years president of the Horticultural and Botanical Society of the Bouches-du-Rhône, is announced. He was interested in the cultivation of Colonial plants, and was Director of the Marseilles Colonial Institute and Museum. His scientific attainments and writings were of a high rank, and were recognised by the award of the Cross of Commander of the Legion of Honour. He was in his seventy-third year.

J. PATERSON.—We regret to announce the death of Mr. J. Paterson, gardener for forty-six years to Colonel Clifton Brown, Holmehurst, Fay Gate, Sussex, aged 70 years. The late Mr. Paterson was well known to horticulturists in Sussex, and was a man greatly esteemed. He died in a railway carriage after hurrying to catch the train.

ANSWERS TO CORRESPONDENTS.

"There are few gardeners, and still fewer amateurs, who do not on occasion require immediate information upon various points of practice. But either from an unwillingness to inquire, or from not knowing of whom to make the inquiry, they too often fail to obtain the information they are in want of. And let no one be alarmed lest his questions should appear trifling, or those of a person ignorant of that which he ought to know. He is the wisest man who is conscious of his ignorance; for how little do the wisest really know—except that they know little. If one man is unacquainted with a fact, however common, it is probable that hundreds of others in the same position as himself are equally in want of similar information. To ask a question, then, is to consult the good of others as well as of one's self."—*Gardener's Chronicle*, No. 1, Vol. I., January 2, 1851.

CARNATIONS ATTACKED BY WORMS: H. F. G.

The worms were too shrivelled when they arrived to be identified with certainty, but they are apparently Enchytraeidae. You will find watering the plants with lime-water, or incorporating a small quantity of naphthaline in the soil, beneficial. The small, white insects you describe have nothing to do with the worms, but they are probably false centipedes, or Polydorus sp., and very harmful. Naphthaline will destroy them, if worked well into the soil.

COCKROACHES: T. H. The cockroaches sent are the American type, *Periplaneta americana*. These insects feed during the night, and are extremely destructive to plants, devouring the soft tissues of both leaves and flowers. Flowers having a strong perfume are especially attacked by them. The eggs of the cockroach are laid in bundles of about sixteen, which are deposited in dark nooks and crannies, where they remain until the young are hatched out. In taking steps for the eradication of the pest, the first thing to do is to stop up, with cement or mortar, any holes in the walls, especially

cavities near the hot-water pipes. This procedure will be found an effective means of driving out the cockroaches from a small house; but in larger structures, some means of trapping may have to be resorted to. A number of jam jars, each containing a small quantity of sweet oil, should be placed about the house. The cockroaches will enter the jars in search of the oil, of which they are very fond, and will be unable to climb out again. The jar should always be placed against a wall or pot, so as to afford a means to the insects of reaching the mouth. The oil should be changed every third day, as it quickly becomes rancid in a warm house. Other cheap and effective baits are treacle and water, or treacle and beer; but these also have to be frequently changed. The use of phosphorus paste as a poison is sometimes effective, but the presence during the night of a hedgehog in the house is a better means of destruction, and will be found effectual in getting rid of many of the insects.

EARTHWORMS DESTROYING SEEDLINGS IN PITS:

Clematis. Mix one gallon of freshly made quicklime in 20 gallons of water, and allow to stand. When clear, apply the lime-water by means of a rose watering-pot, and the worms will come to the surface. Another method is to dissolve ½ oz. of corrosive sublimate (poison) in 15 gallons of water, and apply this similarly. A special preparation, known as Chinese worm soap, may be obtained from Messrs. Cooper, Taber and Co., Ltd.

NAMES OF FRUITS: Box. 1, Minchull Crab; 2, Dumelow's Seedling (Wellington); 3, Lodge-more Nonpareil; 4, Hanwell Souring.—W. H. P. 1, Scarlet Golden Pippin; 2, Brabant Bellefleur; 3, Blenheim Pippin; 4, Newton Wonder.—D. M., *Weybridge*, 1, Catillac; 2, Count pendu-plat; 3, specimen decayed.

NAMES OF PLANTS: *Gardener, Hants*. 1, *Cupressus macrocarpa*; 2, *Libocedrus decurrens*; 3, *Forsythia suspensa*; 4, Probably *Spartium junceum*; send when in flower; 5, *Cryptomeria japonica*.—*Narcis*, *Narcissus odoratus* the Campanelle Jonquil. The *Polyanthus* or bunch-flowered *Narcissus*, which are classed as *Tazetta* and *Tazetta* hybrids, would be more suitable for forcing.—A. S., *Hants*. 1, *Cassia fulvida*, often called *Diplopappus chrysophyllus* in gardens; 2, *Pelargonium abrotanifolium* (Southernwood leaved Pelargonium).—B. S., *Tadstone*, *Calanthe* of the deciduous section, probably *Calanthe Regineri*.

SEEDLING LABURNUM: C. A. O. It is not necessary to graft your seedling Laburnums; they will flower when they reach the adult stage. Only the finer sorts are perpetuated by grafting.

VALUE OF ASPARAGUS BED: F. W. P. If, as you state, the Asparagus bed, 24 yards long, and 4 feet wide, is in fairly good order, and has been well looked after during the eight years of its existence, its present value should be from 25s. to 30s. There is no book specially devoted to the valuation of gardens, so far as we know. You will, however, find the values and approximate amount of produce per acre for most fruit and vegetable crops in *Commercial Gardening*, by John Weathers, a work in four volumes, which may be obtained from our publishing department, price 37s., post free.

VINES "BROWNING": J. T. The cause of the shrivelling of the shoot appears to be what is usually known as "browning," the origin of which is obscure. It has been attributed by some writers to a fungus, but it may be due to some defect in cultural conditions.

Communications Received.—J. B. [The 6d. has been placed in the R.G.O.F. box.]—C. P., J. E. F., R. P., R. A. D., W. Mrs. M. A., G. H. R. D., H. J. E. R. S. of A. A. P., V. H. S. W., and D. G. A. C. H. W. M. W. E. J. L. J. F. McL., R. G. Constant Reader, H. E. R. A. S. C. P. Co., Ltd.—D. MacG., A. H. H. R. D. H. van O.—E. B.—R. W. T.

THE

Gardeners' Chronicle

No. 1526.—SATURDAY, MARCH 25, 1916.

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NEW PRIMULAS.

IT will be within the recollection of those interested in the genus *Primula* that Professor Bayley Balfour, in his masterly discussion of the genus at the *Primula* Conference in 1913, predicted that great additions would be made in the near future to the number of species. This prediction has now been justified by Professor Balfour's own labours; for he describes no fewer than 50 new species,* and promises descriptions of yet another fifty. Descriptions and plants are alike welcome, for Professor Balfour has the rare faculty of combining diagnostic precision with an understanding of the garden value of the plants which he describes. The new contributions to the species of this great garden genus are the more welcome in that they are in large measure the outcome of recent expeditions to N.W. China by Forrest, Purdom, Kingdon, Ward and Farrer. Of the species described many are of undoubted value as garden plants, others are of no less value to the systematist as illustrating as no other genus of plants does the nature and extent of the meaning of that protean word species.

Among the new species there are many which, if they do not prove to be too difficult of cultivation, should be of permanent value to our gardens.

Primula aemula Balf. fil. et Forrest, from open mountain pastures of the Chungtien Plateau, is described as a magnificent species, with bright yellow flowers

which possess a satiny sheen on the exterior. Its nearest Chinese allies are *P. orbicularis*, Hemsley, and *P. reflexa*, Purdom. *P. alsophila*, collected by Farrer and Purdom in the highest woodland zone of the Tibetan forests around the Bei Ling at 11,000-12,000 feet, grows in deep moss and possesses long, creeping stolons of a type unique among *Primulas*: it is a delightful and dainty species with lilac flowers. As is the case with so many plants of similar habitat it appears to live in association with a fungus the mycelium of which has been detected by Professor Balfour in the curious stolons.

P. chionantha, collected by Forrest in the mountains of the Chungtien Plateau (Forrest's No. 10686), bears snow-white, fragrant flowers.

P. citrina, obtained by Forrest in Western Kansu, is a bright species possessed of curious warts on the leaves. These warts, or pustules, consist of enlarged and malformed cells full of bacteria; but whether these bacterial galls are a stigma of disease or not has not been determined. A beautiful dwarf species of the cefarinese series of the section *Bella* is *P. coryphaea*, with flowers of a rich blue, and violet and white hairs in the throat.

P. florida, a beautiful species, has flowers the colour of which ranges from blue to purplish blue, tinged with rose.

No less beautiful is *P. leimonophila*, a species with nodding flowers of Prussian blue colour.

P. philoresia is a charming dwarf species, resembling, yet distinct from, *P. dryadifolia*. *P. pseudo-malacoides* is of interest as it enables Professor Balfour—following Mr. L. B. Stewart—to distinguish among plants grown under the name *P. malacoides* the true *malacoides* Franch., a species of wide range extending from Burma through Yunnan, and presenting a wide range of variation. The forms of this species range themselves in two series, the true *malacoides* with large leaves and tall scapes with many whorls of flowers, and the small-leaved short-scaped flowers, with one or two umbels, of which the type is *P. Forbesii*. Plants of the larger type are figured in *Gard. Chron.*, Dec. 5, 1908, pp. 396 and 397, and belong, according to Professor Balfour, to *P. pseudo-malacoides*. A point of interest is the fact that only thrum-eyed plants of *pseudo-malacoides* are known, and they give no seed except when crossed with *P. malacoides*. To this fact is perhaps to be attributed the recent appearance of variation in strains of so-called *P. malacoides*. *P. viola-grandis*, collected by Farrer and Purdom, bears some resemblance to the charming *P. vineae-flora*, and should properly be put in the genus *Omphalogramma*. Its flowers are zygomorphic, solitary, and of a rich light-violet blue. A photograph and brief description were contributed by Mr. Farrer to *Gard. Chron.*, Vol. LVI. (1914), p. 347. This slender sketch of Professor Balfour's admirable account of the new species of *Primula* must suffice for the present. We hope that in the near future Professor Balfour may give us a monograph of the

whole genus. It would be of the greatest value alike to the gardener and to the man of science, for we think that nowhere in the whole range of the vegetable kingdom are the enigmas of species illustrated more strikingly than in this genus.

ORCHID NOTES AND CLEANINGS.**PROPOSED ORCHID SALE FOR THE RED CROSS FUND.**

THE possibility of assisting substantially the funds of the Red Cross Fund by a sale of Orchids has been raised at the Orchid Committee of the Royal Horticultural Society. Some time ago Sir Jeremiah Colman, Bart., brought the subject to the notice of the committee, and the chairman, Mr. J. Gurney Fowler, invited suggestions bearing on the scheme. He has received the opinions of several Orchidists, most of them expressed in hopeful terms, and invites further suggestions. All Orchidists are invited to help, and, if the sale is decided on, to send particulars of their contributions, which should consist, as far as possible, of uncommon or rare species.

The catalogue would be printed from the list sent in. Mr. Harold Morris, of the firm of Messrs. Protheroe and Morris, has volunteered his services as auctioneer, and his firm will do all in its power to make the sale a success. The suggestion of several leading growers is that the sale should be held in the Royal Horticultural Society's Hall, Westminster, at one of the fortnightly meetings, when a good attendance of visitors might be expected. It is suggested that the sale could be conducted in the annex, where it would not interfere with the show. The question of how the sale is to be made a financial success for the fund raises many points. Presumably there would be no reserve prices, and there would be a danger of valuable plants selling for very much below their worth, and thus disappointing the donors and not adequately benefiting the fund. Some arrangement to guard against this failure should be considered.

Readers who have suggestions to offer should forward them to Mr. Fowler at once, for to prove a success the sale should be taken in hand promptly.

CYMBIDIUM MIRANDA.

FLOWERS representing extreme forms of this handsome *Cymbidium* (*Alexanderi* × *Lowii-grandiflorum*) raised at Westonbirt, are sent by Mr. H. G. Alexander, Orchid-grower to Lieut.-Col. Sir Geo. Holford, K.C.V.O., C.I.E. As with all hybrids in which *C. grandiflorum* (*Hookerianum*) takes a part, the flowers are of the largest size and of fine shape. *C. Alexanderi* is from *C. eburneo-Lowianum* × *C. insigne*, and thus *C. eburneum*, *C. Lowianum* twice, *C. insigne*, and *C. grandiflorum* take part in the new hybrid.

The darker flower, representing the type, is four inches across, the sepals one and one-quarter of an inch wide, and the petals rather narrower, in colour greenish-gold with a slight bronze shade, and thin, well-defined, dotted lines of chocolate red. The broad lip is cream-white, with dark red lines on the side lobes, and a bright red band inside the margin.

The light variety is cream colour, with a blush, the sepals and petals are slightly marked with purplish lines, and the lip has crimson blotches.

* No. XLI. of *Notes from the Royal Botanic Garden, Edinburgh*, April, 1915.

PLANT NOTES.

EUPHORBIA FULGENS.

This old and brilliant exotic is now going over, except where it has been kept in a lower temperature than that of an ordinary stove. One of the easiest to manage of decorative plants, it is usually grown in small pots, each plant carrying only one spray of flowers. There are two methods of raising plants. One is by means of pieces of the stem cut into lengths of about 6 inches, inserted in sandy soil, several in a pot, and placed in a propagating-house. The other method is by means of young shoots, which are freely produced during the spring months. When 5 to 6 inches in length these are inserted in sand in the propagating-pit, in which they root in the course of a few weeks. These plants are suitable for growing in 5-inch or 6-inch pots, one stem to each pot. After being established in the stove, in 3-inch pots, they may be transferred to an intermediate house to pass the summer, being re-potted as soon as the roots have taken possession of the first shift. These can be cut down in the second year to form specimen plants, four or five in an 11-inch pot. There are usually two strong breaks in each, and with proper attention these attain a height of 6 feet, producing very large, arching sprays. For compost, the same material as usually employed for Chrysanthemums is suitable, but when the soil is permeated with roots, the plants need manure-water to keep them in health. The stem cuttings, when rooted, may be placed one in each pot and potted on, but they do not produce as fine specimens as the second-year plants cut back. R. P. B.

ACROCLINIUM ROSEUM.

This "everlasting" flower deserves to be more frequently grown. We grew it here last summer, and were very pleased with it. Growing to a height of 9 to 12 inches, and of a small, bushy habit, it flowers freely from June onwards. Its flowers, which resemble those of the Rhodanthe, are useful for winter decoration. Seed can be sown out-of-doors in a well-prepared site in April, but here I find it better to sow in pots in March, pricking off later and planting out in April or May. Every plant should have the top pinched out, and dead flowers should be removed. The flowers, if to be used for decorating purposes, must be cut before they are fully out. E. T. Ellis, Westwood, Ecclesall, Sheffield.

RHODODENDRON LACTEUM AND RHODODENDRON FICTOLACTEUM.

It is unfortunate when a plant gets into cultivation under a wrong name. When that happens the sooner a correction is made the better. *Rhododendron lacteum* is a case in point. The *Rh. lacteum* of cultivation figured in the *Botanical Magazine*, under t. 8572, and of which there has been mention recently in the pages of the *Gardeners' Chronicle*, is not the true *Rh. lacteum*, Franch. *Rh. lacteum*, Franch., is a plant with flowers varying in colour from cream to canary-yellow; they are not white, with a crimson blotch, as in the plant cultivated under the name. The indumentum of the under leaf-surface in *Rh. lacteum*, Franch. (see fig. 67), is composed of tufts of broad vesicular empty cells, arranged in one stratum to form a dull fawn-coloured velvety uniform surface, showing on magnification scintillating prismatic spots. The indumentum in the cultivated plant (figs. 63 and 69) is composed of beaker-like stalked scales, with the margin of the cup frayed in fringed segments of varying length. These form the bright chestnut-brown or hazel-brown rough foveolate surface of the indumentum.

Beneath them are many smaller shortly stalked scales cast on the same mould, but colourless, and these, when the surface-stratum of scales is removed, give the grey-white appearance of a second or lower stratum of indumentum to the leaf under-surface. These characters are prominent, easily observed, emphatically diagnostic. The *Rh. lacteum* of cultivation is



FIG. 67.—RHODODENDRON LACTEUM, FRANCH. FLOCCOSE HAIRS OF INDUMENTUM FROM UNDERSIDE OF LEAF FROM FRANCHET'S TYPE SPECIMEN; ENLARGED.

the plant which Franchet named *Rh. lacteum* var. *macrophyllum*. Its alliance is with the E. Himalayan *Rh. Hodgsoni*, Hook f., and with the Chinese *Rh. basilicum*, Balf. f. *Rh. lacteum*, Franch., has its nearest ally in the Chinese *Rh. Beesianum*, Diels. The error in naming the cultivated plant is a consequence of Hemsley's passing over Franchet's diagnosis of the variety *macrophyllum* of *Rh. lacteum*. I have had to

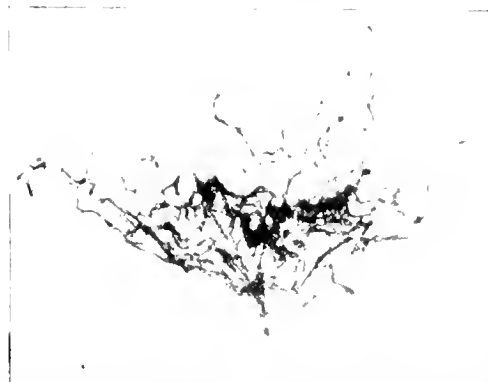


FIG. 68.—SCALE FROM THE UNDERSIDE OF A DRIED LEAF OF RHODODENDRON FICTOLACTEUM (TYPE SHEET); ENLARGED.

deal with this matter in connection with the naming of the many new species of *Rhododendron* sent from Yunnan by Mr. Forrest to Mr. J. C. Williams, of Caerhays Castle, and I have been at some trouble in sifting it. Through the willing help, for which I am grateful, of M. Lecomte, of the Paris Herbarium, I have been able to examine the type-specimens from which

Franchet described his *Rh. lacteum* and its variety *macrophyllum*. The kindness of Mr. F. O. Godman, South Lodge, Horsham, supplied me with leaves of the plant which served for the preparation of the figure in the *Botanical Magazine*. An ample series of Mr. Forrest's specimens presented by Mr. Williams has also been at my disposal. I am able to say confidently that—

- (a) The *Rh. lacteum* of cultivation is the plant referred to by Franchet under the name *Rh. lacteum* var. *macrophyllum*.
- (b) It is a species very different from the true *Rh. lacteum*, Franch.

Unfortunately, Franchet's varietal name, *macrophyllum*, has been already given by Don to another *Rhododendron*, and cannot be used as specific designation in this case. I have, therefore, to give a name to the *Rh. lacteum* of cultivation. Let it be *Rh. fictolacteum*, Balf. f.

A fuller statement upon the subject will appear in *Notes from the Royal Botanic Garden, Edinburgh*, when their publication is renewed. I. B. B.

AMERICAN NOTE.

AMONGST new Carnations in the first rank are Cottage Maid, a deep flesh pink sport from Mrs. C. W. Ward; Laura Weber, a very pretty salmon-pink; Belle Washburn, scarlet; Peace, pure white, finely fringed, noteworthy for its delightful fragrance, which many of our American Carnations lack; Miss Theo, rose-pink, not large, but wonderfully free flowering; and Alice Coombs, a fine pink of large size, a little deeper coloured than Gloriosa. Pink Sensation, sent out last year, has immense flowers, light pink in colour, but has not proved popular; Good Cheer, medium pink, is doing very well with some growers; Alice, a flesh-pink, sent out by Peter Foster, the noted raiser of Lawson, Beacon, Enchantress, Benora, and other grand varieties, has given satisfaction everywhere. It is freer, larger, and of a warmer colour than Pink Delight. It is also easy to propagate, which Pink Delight is not. Matchless has rich large white flowers; it is not quite pure white in winter like White Wonder, and grows more slowly, but is popular with the retailers. Benora remains invincible as a variegated variety; and Beacon, though it splits badly in winter, is generally preferred to the newer Champion. We are still looking for a crimson which will bloom freely, like Harry Fenn, and carry larger flowers.

New Roses of American introduction are not numerous this season. Among them is Mrs. Bayard Thayer, from the Waban Rose Conservatories, Natick, Mass., clear rose-pink in colour. From this same establishment in late years have emanated Mrs. Moorfield Story, Hadley, and Mrs. Charles Russell. Champ Wieland, raised near Chicago, is another promising pink; Red Radiance is a sport from Radiance; Mrs. W. R. Hearst is a dark pink sport of My Maryland.

Of Roses now in commerce Hadley is gradually displacing Richmond as a scarlet; Hoosier Beauty has also some admirers; Ophelia is probably the most popular Rose in America to-day; Mrs. Charles Russell, Mrs. Shawyer, Sunburst, Killarney and its various sports, Lady Alice Stanley and J. L. Mock are other favourites; while the demand for small Polyanthas, like Mme. Cecile Brunner and Geo. Elgar, is very good. W. N. Craig, Brookline, Mass., U.S.A.

* NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of ½d. every two ounces.

NOTICES OF BOOKS.

THE PRINCIPLES OF PLANT TERATOLOGY.*

THE history of our knowledge of natural phenomena tends to repeat itself in different departments of human inquiry, and perhaps the reason for this is to be sought in the workings of the human mind. The accumulation of facts constitutes, roughly, the first stage, and even this passes through many phases. In the beginning much is accepted as proven or as self-evident which turns out to be false. Later on, as the critical faculty develops, the supposed facts are more keenly scrutinised, and are only admitted as valid when they have stood the test of close examination. A good deal of so-called natural history is still in this condition at the present time. Next, the facts are classified, and attempts are made to relate them to one another, and the idea of possible causal connection gradually replaces the notion of imaginary operations of external agents.

When the whole subject is complex, as it is in the world of living things, a good deal of baseless hypothesis is apt to be spun in the endeavour to correlate the facts and to weave them into a coherent mass. It is only as we advance still further that hypothesis becomes relegated to its rightful sphere. We then speak of "working hypotheses," and so on, meaning thereby that we do not really attach great weight to the actual assumptions and surmises, except in so far as they may be of temporary use in enabling us more clearly to formulate definite questions for detailed inquiry.

In the world of chemistry and physics this has been very clearly understood, but unfortunately it is still otherwise in biology. Owing largely to the extreme complexity of biological problems the precise direction of exact inquiry into causes is hard to discover, and still harder to follow, and many biologists do not even trouble their heads about it at all. The facts themselves are so full of interest, whilst the path of rigid analysis is apt to be tedious and difficult. It is so much easier to give rein to fancy—to invoke an unknown "vital force," which shall serve as an open sesame to nature's secrets—in short, to rest in the comfortable conviction that the plan of nature will reveal itself to the mind that is blessed with the gift of intuition. Hence it is that the track of intellectual progress is everywhere strewn with the wreckage and rubbish of false doctrines and obsolete dogmas.

In the material world we have as yet only discovered one method of successfully winning new territory from the vast expanse of the unknown. This method depends on the conviction (itself based on experience) that an identical result will always emerge, provided that these conditions of the experiment are precisely repeated. But it is evident that a considerable degree of acquaintance with the nature of the conditions is bound up with the use of the method itself, and this is just where the biologist is in difficulties. Problems concerning living things are so far more complicated than those which confront the ordinary chemist and physicist that some naturalists have despaired of ever being able to emulate their example. Nevertheless, the rapid strides that have been made within the last two decades should serve to reassure us that the same means of research which have proved so potent in the hands of the chemist will yield similar results when applied to the far more intricate phenomena classed as vital. But this will happen only in proportion as accurate analysis enables us to disentangle the complexity, so that we may apprehend the nature and conditions of the substances which constitute and react with the very materials of which the living being is made up.

We cannot afford to disregard any kind of evidence which may be gleaned from our study of organisms. Physiology and pathology are

great engines of research, but the further we push our inquiry the more clearly is the goal seen to lie in the province of chemistry and physics. And from such a point of view we come to recognise that there is no essential difference between the normal and the abnormal behaviour or structure of a plant. Each is alike most profitably to be investigated on the assumption that, given uniformity of relevant conditions, the same result will inevitably recur; and, whether this result be classed as "normal" or "abnormal," is largely a matter of subjective definition.

But clearly before we can set about investigating the problem, we must be in possession of as many facts about it as possible, and, while the normal type of the species may generally be accessible, the teratological deviations are commonly less readily available. But these should not be ignored, because valuable hints for further investigation of the main problems may be, and often are, obtainable from this source. It is with interest, then, that we greet the appearance of Mr. Worsdell's book on plant teratology. Readers of the *Gardeners' Chronicle* will scarcely need to be reminded of the prominent position as a teratologist occupied by its former editor, Dr. Masters, and, indeed, the volumes of this journal

Opponents are severely criticised, and the wonderful statement is made (p. 9) that "abnormal structures are not of the nature of haphazard, fortuitous variations, are not the result of the working of mere chemical and physical energies, which are always blind, but are to be attributed, equally with the normal structures found in Nature, to the working of a regulative vital force." Now this is simply absurd rhetoric, and at the same time it is absolutely unscientific. No sensible person supposes the abnormalities to be fortuitous or haphazard; indeed, they could not be so, if they were the effect of "mere [why mere?] chemical and physical energies." We know nothing at all about any "regulative vital force," and it is therefore preposterous to attribute anything whatsoever to its supposed working.

It is a little unfortunate, perhaps, that Mr. Worsdell should have chosen to adopt the aggressive attitude of a sort of Infalible Person. He appears to pose as the apostle of Celakovski, and drives home his doctrines as though he had a whole botanical Council of Trent behind him. But in scientific matters we nowadays care very little about Authority. We are more concerned with facts, and if Mr. Worsdell had seen fit to

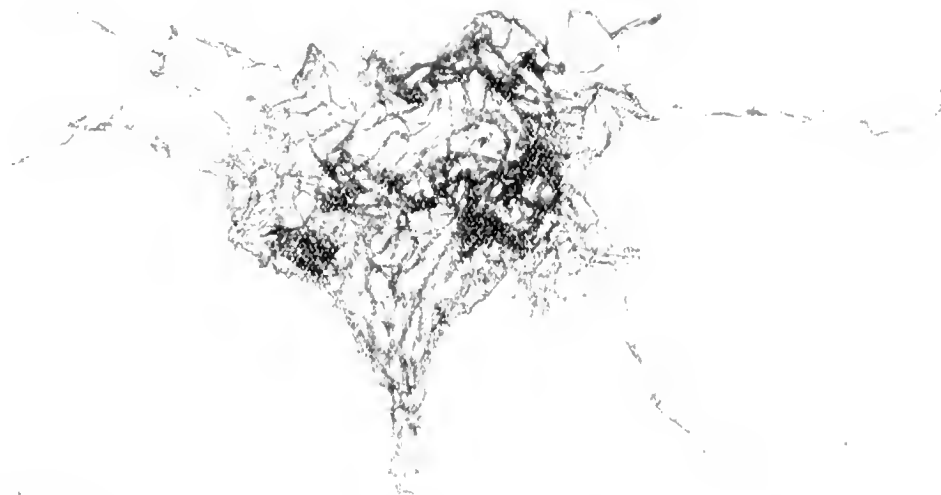


FIG. 69.—SCALE FROM THE UNDERSIDE OF A FRESH LEAF OF RHODODENDRON PICTOLACTUM: ENLARGED.

(See p. 168.)

constitute an important repository of valuable information on the subject.

In Mr. Worsdell's book we find much that is new and full of interest, and in this respect we have nothing but praise to accord. But we would join issue with him in the way he has thought fit to expound what he conceives to be the "principles" of teratology.

In reading his book we find ourselves enveloped in a strange atmosphere, more familiar, perhaps, to the student of mediæval philosophy than to the modern scientific writer. In place of a clear scientific conception of practical methods of inquiry we meet with confident appeals to mere authority, and a reliance on doctrines which, so far from assisting, would, if accepted, bar the way to any real advance in knowledge. Assumptions are all very well in their place; but their place is that of the lowest, not the highest, degree of importance, in order of values. But Mr. Worsdell, at any rate, has the courage of his convictions, even although to some of us these may appear to rest on the frailst foundations. Thus, on the first page we are told that there "can never have been, so far as vascular plants are concerned, more than three categories of organs—stem, leaf and root." Apparently the sporangium is not regarded as an independent structure of cardinal importance.

have exercised more restraint in pressing his own convictions, his work would have gained in value. In spite of all this, however, the book is worth having, containing, as it does, a large amount of information which is partly new and partly brought together from sources which are often not readily accessible. The pages are wonderfully free from misprints, though in Plate IV., Fig. 5b and 5c, the plant referred to is evidently Marchantia, and not Lunularia, as stated on the opposite page. We look forward with interest to the publication of the second volume, which is to deal with the teratology of the flower, and will complete the work.

CONFESSIONS OF A NOVICE—IX.

THE ALPINE HOUSE AT WISLEY.

IN one of the interesting articles on his Cotswold garden, Mr. Elwes refers to the pleasant refuge which an Alpine house offers to the enthusiastic gardener prevented by age or weather from enjoying the early plants in the open air. So I determined to put the suggestion to the test, and having no house of my own, proceeded through the snow and gloom to Wisley. There, as elsewhere, everything in the open air was

* *The Principles of Plant Teratology*. By W. C. Worsdell, F.L.S. (London: Printed for the Ray Society and sold by Dulau & Co.) 1915.

cold and raw and forbidding. Plants in flower wore a woeful air, the flowers of *Forsythia suspensa* were all bedraggled, the creamy whiteness of *Daphne blagayana* was marred by the brown touch of frost, and *Primula Winteri*, which a month or more ago was flowering in a sheltered and wet chink in the rock-work, had also suffered from the long spell of inclement weather. And so, as Mr. Farrer would say, up and up and up I made my way to the Alpine house. At its doors the gloom of the outside world ceased, and the brightness of the flowers made a genial sunshine of their own. The contrast between colour in the little Alpine house and the drabness outside was as great as that between the trim smartness of the Ritz and the dark grime of London streets. So although I have no wealth of garden lore, I shall, I think, be doing a kind of horticultural boy-scout's good action by recommending others to make the pilgrimage. *Saxifraga burseriana* gloria of snowy whiteness and the yellow *S. apiculata* light up the house. *S. Griesbachii*, in its very best form, adds a note of warmth to that of colour, as does also the rose pinkness of the leaves of *Cotyledon rosea*. The large

unmentioned, unless these lines, which express, albeit inadequately, the pleasure which my visit gave me, induce some other and more learned and observant gardener to pay a visit. It may be also that if he goes he will be able to suggest a solution of the problem that puzzles me—the brightness of these Alpines in this sunless season. In their homes they have the dazzling light from the snow, though doubtless they pass through many misty days. Here they seem to flower earlier and no less brightly than in their native place. Is it that what they lack in sunlight here is made up for by the higher temperature? For although the Alpine house is cool, the temperature must be a good deal higher than it is in the Alps. It is a curious fact that lack of sunshine has such very different effects on different plants. Thus, as may also be seen at Wisley in one of the plant houses, the crimsons of *Primula sinensis* are as brilliant this year as they ever are; but the colours of *P. obconica* appear to suffer much from the deficiency of sunshine. The Alpine, on the other hand, seems always to be bright. Like *Phyllida*, the Alpine flower "come either rain or shine is always fair." A. N.



FIG. 70.—*HOULTUYNIA CORDATA* IN A BOG GARDEN; BRACTS WHITE, THE THREE INNER ONES SPOTTED WITH RED.
[Photograph by W. Irving.]

leaves and not ungraceful panicles of *Sax. Megasea*—of many names—e.g., *afghanica*, etc., faces the entrance of the house, and at its foot is a large pan of *Epigaea repens*—the white blossoms of which scent the air. The trim *Soldanellas*—sentinels of the snows—are, of course, already on duty, and perhaps the most charming of all the flowers in bloom is *Primula Juliae*, the flowers of which are mauve when young and bluish-purple when fully open. The pale blue *Primula Winteri* is not so good as it used to be. They tell me that it suffers from woolly aphid at the root, and that the Wisley strain is unfertile, and hence has to be propagated by division. The rich colour of *P. Juliae* makes that of *P. marginata* look pale, and yet the latter is a charming thing. *S. oppositifolia* and *S. longifolia*, as well groomed as *Ouida's* guardsmen, has no need to flower—its foliage gives it an indefeasible title to rank in any Alpine house. There are not a few other plants in the house which contribute to the brightness, and deserve a mention, but inasmuch as I went for my own enjoyment, and only as an after-thought write of what I saw, they must remain

HOULTUYNIA CORDATA.

HOULTUYNIA CORDATA is an attractive and interesting bog plant belonging to the Pepper family. The plant is of perennial habit, spreading by means of underground stolons, but its growth is not too aggressive, as is the case with many other plants of this character. The annual stems are usually unbranched, erect, and leafy, growing about one foot high, and are terminated by an involucre resembling a flower. This consists of four white ovate spreading bracts, arising immediately below the spadix or spike which bears the minute flowers closely packed together. *H. cordata* is a native of Japan, and is attractive in the bog garden during the summer and autumn. The illustration in fig. 70 is from a photograph taken in the month of July. Another species, *H. californica*—a native of California—also known as *Anemopsis californica*, is a perennial of spreading habit with long runners. The leaves are nearly all radical, produced in tufts. The spreading white bracts are six in number, of which the inner three are spotted with red W. I.

The Week's Work.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

PEACH BLISTER OR LEAF CURL (EXOASCOUS DEFORMANS).—This is one of the chief pests of the outdoor Peach, very few seasons passing without a visitation. It usually arrives soon after growth commences in the spring, more particularly during a spell of east winds. The pest, however, may be controlled by systematic and early spraying with Burgundy mixture. A brief account of the results of such treatment, and the striking results which it produced, is given in *Gard. Chron.*, May 22, 1915, p. 272. Another and no less effective spray fluid is the wash known as "Medela." It must be used in the spring before the buds open, and strictly according to the directions supplied by the makers.

THE LOGANBERRY.—When planting the Loganberry, plenty of room must be allowed for its development. Although not fastidious as to soil, it is a gross feeder, and well repays thorough preparation of the ground before planting, combined with regular top-dressings with manure when it is in full bearing. Where only a small number of canes can be accommodated, it is a good plan to train them on a fence or trellis in the fruit or reserve garden. If grown extensively the poles used for Raspberries are preferable. They should be made a foot or two longer than for Raspberries, as the Loganberry cane, if well ripened, will fruit almost to its full length. The fruit ripens later than the Raspberry, and this makes it a useful addition to ordinary fruits. It is suitable for bottling. For this purpose, the best should be picked before they are too ripe. The Loganberry requires similar treatment to that accorded to the Raspberry. The old fruiting canes should be cut to the ground as soon as the crop is picked, and the young growths thinned, leaving only the requisite number, which should be tied up out of harm's way as they lengthen. When the old canes are removed, the new ones should be trained in their permanent places. If this removal of old canes has been neglected, it must be done now, and any weakly or immature canes cut clean away. Established plantations should be given a good dressing of manure. Young canes may still be planted with every prospect of success. After planting, mulch them as a precaution against drying winds. When growth becomes active, these late-planted canes should be cut to the ground.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

FERNS.—Ferns need overhauling annually, and those which require it must be repotted. Large specimens will thrive undisturbed for several years, provided they are well attended to in the matter of watering and feeding, but the old fronds must be cut off. See that the drainage is quite clear, and if worms are troublesome, thoroughly moisten the roots with lime-water. When repotted or top-dressed, as the case demands, place them in a warm, moist house to complete their growth. The newer varieties of *Nephrolepis* are fast becoming popular, and a good batch of these useful plants should be grown. They are easily increased by careful division of the roots.

FORCED SHRUBS. Most of the forced shrubs will need some attention when they have passed out of flower. *Prunus triloba* must be cut well back to induce strong growths from the base. The plants must be placed in a warm, moist house, where they will soon make plenty of growth. This should be thinned out, leaving the strongest shoots for flowering another season. If they need repotting, this may be done now.

Lilacs must be cut well back, and subsequently planted out on a well-cultivated piece of ground. Azaleas may be repotted, if necessary, and placed in a warm, moist house to complete their growth.

STOVE PLANTS.—Stove plants should be repotted at once. A suitable compost for most of them consists of a mixture of good fibrous loam, peat, leaf-mould, crushed charcoal, and coarse sand in suitable proportions. Pot firmly. Keep the plants close and shaded during the hottest part of the day. Syringe the foliage with lukewarm rain-water twice daily, and frequently damp the walls and paths.

CYCLAMENS.—As the plants pass out of flower those which are required for potting on may be placed in a cold frame for a few weeks and kept on the dry side. They may then be shaken out of the old soil, repotted, and kept moving steadily in a moderately warm, moist house. Repot young plants, as they require more room, and grow them also in a warm, moist house. Later remove them to cooler conditions, finally plunging them in ashes in a cold frame.

CHRYSANTHEMUMS.—The more forward Chrysanthemums may be placed in cold frames. Ventilate those recently repotted, and shade from bright sunshine.

ANNUALS.—Schizanthus and Clarkias, having filled their pots with roots, need plenty of stimulants. Make another sowing of Mignonette.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellsfield Manor, Basingstoke, Hampshire.

SPRING BEDDING.—In many gardens bulbs have not been planted this season for spring effects, but there are plenty of other subjects available for the purpose, including Wallflowers, Erysimum, Polyanthus, Primroses, Myosotis, Aubrietia, Arabis, Daisies, Iberis sempervirens, Alyssum saxatile, Nemophila, Violas, Pansies, and Antirrhums. These provide a wide range of colour. There is much beauty in a bed or border of Wallflower Cloth of Gold edged with blue Myosotis, whilst pink Brompton Stocks associate well with blue Myosotis. Large masses of this Myosotis by itself will produce sheets of blue. Coloured Polyanthus look well when massed closely together, whilst those approximating to yellow may be intermixed with Aubrietia Dr. Mules or Lavender, or with purple Aubrietias raised from seeds. The beautiful double pink Daisy sent out by Messrs. Sutton comes true from seeds and forms a suitable edging for a blue bed, or even for one of pale yellow, for example, one of Polyanthus. Erysimum Golden Gem forms a splendid mass of yellow, and might take the place of Alyssum saxatile for distant effect, especially as the latter plant does not always transplant well. Wallflowers alone make a spring garden beautiful; I prefer the varieties Blood Red, Cloth of Gold, Eastern Queen, Fire King, and Primrose Monarch. Violas and Pansies may be used to good effect for small beds or for edging. These spring flowers may also be grouped around or in close proximity to spring-flowering shrubs, such as Cytisus praecox, Ribes sanguineum, Prunus triloba, Berberis Darwinii, B. Knightii, B. dulcis, and B. stenophylla; Forsythia suspensa, Magnolia stellata, Andromeda floribunda, Daphne Cneorum, and Kalmia glauca.

HARDENING PLANTS.—Sweet Peas, Pentstemons, and Violas in frames are tender this season, and must be ventilated freely, removing the lights entirely in mild weather. Half-hardy plants must not be removed too soon to cold pits and frames, but move them immediately it is safe, retaining the tenderest plants, such as Heliotropes, in warmth the longest period.

PRUNING ROSES.—The earlier the pruning of Roses can be done with safety the sooner may we expect them to flower. The well-worn rule to prune weak growths severely and strong ones lightly is thoroughly practical. A few very early blooms may be obtained by neglecting to prune a few Roses on a wall in a sunny, sheltered position. After the pruning is completed apply a

light dressing of manure over the beds, and fork in the material for the sake of neatness. Where Roses have been habitually well fed it will be a saving of labour to give them merely a dressing of superphosphate of lime.

PREPARATION FOR MOWING.—Get the mowing machine in order for the coming season. Should the knives need sharpening or the machine repairing, these matters should be attended to soon.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

CAPSCICUMS AND CHILIES.—The seeds of Capsicums and Chilies may be sown as advised for Tomatos on page 5. Although the plants will thrive in a moderately low temperature, better results are obtained by growing them in a humid house having a stove temperature. Use the syringe freely to keep down attacks of red spider.

AUSERGINE.—Seeds of this vegetable may be sown now, treating them in the way recommended for Tomatos. The plants may be grown out-of-doors in sheltered situations. Those grown and fruited under glass should be transferred to 10-inch pots when of a suitable size. Use rich soil. Keep the atmosphere uniformly moist by syringing and damping. If large fruits are desired stop the growths after some of the fruits have set, and remove flowers that develop subsequently. The long, purple variety produces the larger and better-flavoured fruits.

MAIN CROP POTATOS.—In gardens having a well-drained soil, and in sheltered districts Maincrop Potatos may be planted when the soil and weather conditions are favourable. Clay soils are still pasty, the effect of the recent snow, and planting in their case should be deferred until the ground will work freely, even if a delay of several weeks is caused. Well-sprouted sets should be planted several inches deep, allowing plenty of room for the plants to develop, the distance apart to be regulated by the habit of growth of the variety; a space of 2ft. 6in. each way is not excessive for strong-growing varieties. For clay soils choose a large-topped, vigorous variety, that is known to succeed. Potatos may be planted until the end of May, but it must be remembered that the Potato disease (Phytophthora) spreads rapidly in late summer and autumn on immature haulm and tubers, especially in wet weather.

HARDENING ONIONS AND LEEKS.—Transfer Onions and Leeks raised under glass in January to cold frames, removing the lights entirely for a few days before the time of planting in mid-April. Seedling Onions and Leeks should grow perfectly upright; gentle pressure of the soil with the fingers will often correct a tendency for them to flop.

GENERAL REMARKS.—Transplant Celery seedlings immediately they are large enough to handle. Ventilate cold frames and frames on hot-beds with caution, taking advantage of mild and sunny weather to increase the amount of fresh air. Earth early Potatos in frames immediately they require this attention. Grow Turnips in frames cool without exposing them to frost.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

COELOGYNE CRISTATA.—The flowering period of Coeogyne cristata has now passed. When roots are about to emerge from the base of the new growth, repotting may be carried out if necessary, but this operation is only desirable at long intervals. Healthy examples that show no signs of deterioration, and are not loose in the compost, may be passed over for a season, as it is not advisable to repot the whole of the plants at one time. The specimens which need immediate attention are those that have considerably overgrown their pots, and in such cases a thorough overhauling will be necessary, or future pseudo-bulbs will be reduced in size. They should

be turned out of their pans, the old compost removed, and all the back pseudo-bulbs cut away, except those required. As a general rule, three behind each lead or growing point will suffice. These leading portions are made up into a specimen, placed fairly close together with a few new growths pointing towards the centre of the pan. Each pot or pan is filled to one half of its depth with drainage material, the rooting medium consisting of Osmunda-fibre with a sprinkling of chopped Sphagnum-moss. When the repotting is completed, arrange the plants in a moist part of the Cattleya house, and give enough water to wet the whole of the compost. Shade them from strong sunlight, and spray overhead once or twice a day when the weather is bright. For a few weeks water must be applied sparingly, but when in full growth Coeogyne need a copious supply until the pseudo-bulbs are fully developed. If it is desired to increase the stock, the old back bulbs referred to above may be laid upon a bed of Sphagnum-moss in the warm house, until they form growing points, when they may be either potted separately or made into a specimen. Plants not repotted should be examined, and where possible a little soil worked in between the growths. The genus Coeogyne is a large one, and there are generally several species in bloom throughout the year. For this reason a few will need attention at the root at other seasons.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

MELONS.—The earliest plants have been stopped, and in order to secure an even crop it may be necessary to pinch out the first female flowers. The system which I have found best is to grow early Melons in pots filled with rich, strong loam, and to feed the roots as they appear on the surface with a dusting of quick-acting fertiliser. The large amount of soil which some use soon gets sodden by copious applications of manure-water, and stagnant conditions are a fertile source of canker, which never attacks Melons grown in pots. Maintain a genial, humid atmosphere by sprinkling and syringing with clear water, and let the temperature at closing time be 90° to 95°, and 70° to 75° at night, according to the weather, admitting a little fresh air after 7 p.m. Make further sowings as necessary.

STRAWBERRIES.—As the sun gains power let the plants have increased supplies of tepid water, and syringe them freely twice daily. An important detail, especially with free-flowering varieties, is to thin the trusses before the flowers open, and it must be remembered that attention to fumigating is as essential to success as watering and syringing. Remove the fruiting plants from shelves in vineries as soon as convenient, and grow them in light pits kept moist and very warm. In such conditions the fruits swell rapidly and colour quickly, therefore feeding should be regularly practised but discontinued directly the berries commence to colour. To obtain Strawberries of the finest quality an abundance of fresh, warm air is essential. Late plants, of such varieties as British Queen and Dr. Hogg, will continue to maintain the succession until the early varieties ripen in the open. Keep the plants cool, and admit air freely in mild weather; unless the weather is very unfavourable, fire-heat will not be needed until the plants flower. When the fruits have set fire-heat may be dispensed with. Early morning is the best time to feed the roots; important as is the feeding of pot Strawberries, the stimulant must not be too strong, nor given at the wrong time.

FIGS.—The fruits on the earliest trees are setting. As soon as the fruits begin to swell let the temperature rise 5° at night, with a corresponding increase by day. See that old trees in pots, tubs, or other confined spaces do not suffer from want of water, and feed established trees with weak manure water at alternate waterings. The latest trees may be started, but force them gently as they may receive a check later.

EDITORIAL NOTICE.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS.

TUESDAY, MARCH 28—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
Roy. Inst. (Lecture by Prof. F. Keeble, on "Modern Horticulture.")

WEDNESDAY, MARCH 29—
Perpetual-flowering Carnation Soc. Show, R.H.S. Hall, Westminster.

TUESDAY, APRIL 4—
Scott. Hort. Assn. meet. Roy. Inst. (Lecture by Prof. F. Keeble, on "Modern Horticulture")

WEDNESDAY, APRIL 5—
R. G. A. Executive meet.

THURSDAY, APRIL 6—
Linnæan Soc. meet.

MONDAY, APRIL 10—
United Hort. and Ben. Prov. Soc. Coms. meet.

TUESDAY, APRIL 11—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
Roy. Inst. (Lecture by Prof. F. Keeble, on "Modern Horticulture.")

WEDNESDAY, APRIL 12—
Sheffield Chrys. Soc. Show and Lecture. Roy. Hort. Soc. School Teachers' Exam.

FRIDAY, APRIL 14—
Nat. Rose Soc. Spring Show in R.H.S. Hall.

MONDAY, APRIL 17—
Nat. Chrys. Soc. meet. (Lecture by Prof. Frederick Keeble, on "Plant Breeding," with special reference to Chrysanthemums.)

TUESDAY, APRIL 18—
Roy. Hort. Soc. Daffodil Show (2 days). B.G.A. (Leeds Branch) meet.

FRIDAY, APRIL 21—
Good Friday (Bank Holiday).

MONDAY, APRIL 24—
Easter Monday (Bank Holiday). B.G.A. Annual Conference (London).

WEDNESDAY, APRIL 26—
Roy. Hort. Soc. of Ireland Show (2 days).

THURSDAY, APRIL 27—
Midland Daffodil Soc. Show, Birmingham (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 43.6°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. *Thursday, March 23* (10 a.m.): Bar. 29.2; temp. 38.0. Weather—Snow showers.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY, AND FRIDAY—
Hardy Bulbs, Lilies, Herbaceous Plants, Roses, etc., at 12, by Protheroe and Morris, 67 and 68, Cheapside, E.C.

MONDAY AND WEDNESDAY—
Rose Trees, Shrubs, Perennials, etc., at Stevens' Rooms, 38, King Street, Covent Garden, W.C., at 12.30.

WEDNESDAY—
Japanese Lilies in cases, at 4, at Protheroe and Morris's Rooms.

THURSDAY—
Roses, at Protheroe and Morris's Rooms.

Assimilation of Carbon Compounds. The Work of the Green Leaf.

The fundamental chemical operation performed by the green leaf, whereby the carbon, including compounds, sugars, starch, and cellulose, are manufactured from more elementary substances (carbon dioxide and water), has been the subject of countless investigations during the past forty or fifty years. Yet, in spite of all this work, our knowledge of the process is still far from complete. We know that both sunlight and chlorophyll are essential to the process, but how chlorophyll applies the radiant solar energy to this work we do not know. Whether living protoplasm lends its cunning hand to the manufacture has not been finally established. We know that within a few minutes of sunlight falling on a leaf, starch makes its appearance therein, and in various ways it has been established fairly conclusively that this starch is not a direct product of the manufacturing process, but only a convenient form of storage or reserve carbohydrate. One important argument that

starch is not the first carbohydrate formed in the green leaf is derived from the fact that the leaves of many plants contain no starch. This, for instance, is the case with many monocotyledons, such as *Allium Ceba* and *Scilla maritima*. For this, as well as for other reasons, it is generally agreed that some form of sugar is the first carbohydrate-product of assimilation.

Opinion, however, is divided as to which of the several kinds of sugar known to occur in the leaf enjoys the distinction of being in a sense the mother of all the carbohydrates of the organic world.

Many years ago, Brown and Morris, in a research which has become classical, gave reasons for concluding that this first-formed sugar is not, as might have been supposed, one of the simpler kinds, such as grape sugar, the formula of which is $C_6H_{12}O_6$; but the more complex and universally known cane sugar, or saccharose, as the chemists name it; a sugar which has the formula $C_{12}H_{22}O_{11}$. The question of the nature of the true final product of this manufacturing process is no mere academic one. Some day we may be sure that man will learn to make machinery do what the green plant alone can do at present—manufacture from the illimitable supplies of water and carbon dioxide the food materials of the world. Before that triumph over Nature is won, men of science must discover the trade secrets of the green leaf. Hence any step toward that discovery is important. The elaborate investigations published in the *Journal of Agricultural Science** by Messrs. Davis, Daish and Sawyer, appear to have settled finally the long-disputed question of the nature of the first carbohydrate synthesised by the green leaf. Their conclusion is that, as Brown and Morris held, saccharose (cane sugar) is that substance.

The evidence is particularly clear in the Potato. In that plant, from the time the tubers begin to develop, the principal sugar in the leaf is saccharose, and the amount increases each day from sunrise until early afternoon (2 p.m.). During the rest of the day and in the night, the amount decreases, owing to the passage of sugar from the leaf through the stem to the tubers.

Mosaic Disease of Tobacco and Tomatos.

Of all the diseases which affect plants, the most puzzling and interesting is the Mosaic disease of Tobacco and other plants of the family Solanaceae. This mosaic disease has been known and studied for some time with respect to its effects on Tobacco, but it has only recently been shown by Mr. G. P. Clinton† that the same disease occurs in the Tomato, and that its attacks on the latter plant are on the increase. Mosaic or Calico disease of Tobacco makes its appearance in the very young leaves, and affects all the new growth. It may be recognised by the presence of light, yellowish-green irregular areas, which cause the leaf to present a mottled and wrinkled

appearance. Mr. Clinton has succeeded in transferring the disease from Tobacco to Tomato plants, and has thereby been able to show that it produces similar symptoms in the latter plant and causes the disease known as chlorosis. It has also been transferred from Tobacco to Potatoes, albeit—and happily—with difficulty. A mosaic disease occurs also in Sweet Peas, and it may be that it is due to the same cause.

In spite of many and careful investigations, all attempts to discover the presence of fungus or bacterium or protozoon in the diseased tissues have resulted in failure, and yet the disease is infectious to the highest degree. To inoculate a healthy plant, all that is necessary is to rub crushed diseased leaves on a healthy leaf. By this means, Mr. Clinton has been able to transfer the disease from Tobacco to Tomato plants, and back again to healthy plants of Tobacco. As is but natural, these remarkable facts have given rise to much speculation as to the nature of the disease, and on this subject two opposing views are held. According to the one, the disease is due to an ultra-microscopic organism; that is, one so small as to be invisible even with the highest powers of the microscope. The fact that the virus may pass through a Berkefeld filter, which arrests bacteria, does not, in the opinion of those who hold this view, demonstrate that it is false. For if the organism be small enough it may pass through the filter. It is known, moreover, that the virus of certain human diseases—that, for example, of infantile paralysis—is also capable of passing through a Berkefeld filter.

The chief argument in favour of the "organism" theory lies in the fact that a minute quantity of virus suffices not only to infect a plant, but also to spread the disease throughout its tissues.

The alternative hypothesis holds that mosaic disease is not due to the presence and activity of a micro-organism, but to some toxic ferment (enzyme). On this view it must be supposed either that the enzyme is of almost incredible virulence, and that it spreads through the tissues, destroying them whilst it itself is undestroyed, or that it grows and increases just as a living cell may grow and increase. Here we step across the barrier which divides the little strip of the known from the dark and illimitable region of the unknown. Yet, in spite of our ignorance of the ultra-microscopic forms of life, experiments have been made which seem to indicate that the virus of mosaic disease can hardly be a living cell. For Mr. Clinton has shown that the virus may be extracted without more than partial destruction of its infective properties by means of ether, chloroform or alcohol. It may also be preserved for some time in toluid (a powerful antiseptic). In the light of these experiments, it would seem that the "non-organism" view must be accepted.

The extraordinary infectiousness of the disease deserves the attention of gardeners, for, although, so far as we know, mosaic disease is not present in Tobacco grown in

* Vol. VII., No. 3, February, 1916.

† See Report 38, Connecticut Agricultural Experimental Station, 1914.

this country, the facts that it may occur on the Tomato and that it appears to be on the increase in America make it important that growers should realise that the virus may be carried by the hands or by garden tools. The disease does not appear to be transmitted by the seed, but it is in the seed bed that it appears. Hence the use of sterilised soil—to be recommended on other grounds also—is likely to prove a successful means of preventing outbreaks of the disease.

SOPHORA MACROCARPA, tab. 8,647.—This is an old garden plant, first introduced to this country in 1822 by Loddiges. It is often confused with *S. tetraptera*, but differs from it in having larger leaflets and no wings to the fruit. The flowers are yellow and in axillary racemes.

LOBELIA HOLSTII, tab. 8,648.—Lobelias have long been popular in gardens, and from the plate it would appear that this new species may prove useful. It comes from East Africa, and the specimen from which the drawing was prepared flowered at Kew in a frame. Unfortunately, it failed to ripen seeds, and, behaving as an annual, was lost to culti-

LADY LAWRENCE, whose recent death is announced on another page, the plant having been introduced by her husband, the late Sir Trevor Lawrence, from Argentine in 1912. The flowers are solitary; the large perianth is yellowish white, veined heavily with purplish-brown.

ALPINA ELWESI, tab. 8,651.—Introduced from Formosa by Mr. H. J. Elwes, and flowered by him at Colesborne in 1915, this new plant bears his name. It comes from a very warm district, and is found in shady forests. The densely pubescent character of the lower surface of the leaves is a distinguishing character, and sepa-



FIG. 71.—EUCHARIS LOWII: FLOWERS WHITE.

MESSRS. WM. BULL AND SONS' SALE.—

The most important part of the Orchid section of Messrs. BULL AND SONS' sale was dealt with by Messrs. PROTHEROE AND MORRIS on Tuesday last, the 21st inst., a good company of buyers being present. The sale was highly satisfactory. Although low prices were the rule, the hybrid *Odontoglossums*, for which the firm has been noted, realised prices beyond the expectation of the owner.

"BOTANICAL MAGAZINE."—The following plants are illustrated and described in the issue for February:—

EUCHARIS LOWII, tab. 8,646.—This species (see fig. 71) was first described in *Gard. Chron.*, May 6, 1895, p. 538, by Mr. J. G. BAKER. The plant is a native of New Granada, and the pure white flowers are as large as in the finest forms of *E. grandiflora*.

vation. It is to be hoped that the difficulty of seed setting in this country will be overcome, for the spike of lilac-coloured flowers with yellow blotches is very attractive; the leaves are shown with margins of dull red, the tuft of growth being similar to the popular *L. compacta*.

RHODODENDRON HYPOGLAUCUM, tab. 8,649.—This species comes near to *R. argyrophyllum*, and was first discovered by Prof. HENRY in 1886, in the neighbourhood of Ichang, China. It was introduced by Mr. E. H. WILSON, who states that it attains to a height of 20 feet. The flowers are white, flushed with rose outside, and dotted with pink in the tube. At Caerhays Castle the plant has been found to succeed best in partial shade.

The March issue contains the following:—

ARISTOLOCHIA LAWRENCEAE, tab. 8,650.—This species is named in compliment to ELIZABETH

rates it from *A. calcarata*. The racemose inflorescence bears white flowers, heavily blotched with carmine on the lip.

CHAMAEDOREA NANA, tab. 8,652.—A small Palm, native of Costa Rica, introduced by Messrs. SANDER AND SON, and sent out by them as *C. pumila*. The plant is one of the few Palms which grow only one to two feet high.

ANDROSACE COCCINEA, tab. 8,655.—This is the plant illustrated in *Gard. Chron.*, July 17, 1915 (fig. 13), as *Androsace Bulleyana*, and it is interesting that in the note by Mr. IRVING which accompanied the picture, he states, "On investigating the plant in the Kew Herbarium I failed to find any marked differences between *A. Bulleyana* and *A. coccinea*." Mr. SCOTT has now decided that the two are identical. The scape is a many-flowered umbel of cinnamon-red, and vermilion coloured flowers.

"KEW GUILD JOURNAL." The issue for 1916 is one of the best numbers of this journal that have appeared, and gardeners, whether inside or outside the pale of the increasing family of Kew, will find the pages absorbingly interesting. The volume is dedicated to Miss MATILDA SMITH, the talented artist, and a charming portrait of this lady forms the frontispiece. A short biography by Dr. BOTTING HEMSLEY shows that Miss SMITH has drawn some 2,300 plates for the *Botanical Magazine* alone. We learn that 60 British members of the Guild have joined His Majesty's Forces, and many hold commissioned rank. Mr. C. P. RAFFILL has been promoted Company-Quarter-master-Sergeant, and is with his regiment, the Royal Fusiliers, at the front. With the exception of one married labourer all the members of the present staff who are of military age and fit have attested under Lord DERBY's scheme. Kew responded nobly to the call for men, no fewer than 105 of its members having gone to the war. Twenty-four women gardeners are being employed temporarily. Amongst other items of interest in the chapter headed "Kew Notes" is the statement that the Government has purchased four acres of land on the north side of the Mortlake Road for experimental work in connection with the new pathological laboratory. During the year 1915 as many as 4,300,330 persons visited Kew Gardens.

LONDON GARDENS GUILD.—We have received particulars of an interesting scheme, known as the London Gardens Guild, of which Mrs. NOEL BUXTON is the president, and Mr. CYRIL HARDING, of the British Gardeners' Association, the secretary. The scheme is to encourage the planting of gardens in London, and especially in the poorer districts. Competitions will be held from time to time, and prizes offered, to encourage the members of the Guild to put forth their best efforts, and societies already doing similar work will be asked to affiliate free of charge. The motto of the Guild is "London a Garden City: Why Not?"

THE SURVEYORS' INSTITUTION. The next ordinary general meeting of the Surveyors' Institution will be held in the Lecture Hall of the Institution on Monday, April 10, when a paper, entitled "The Principles of Town Planning," will be read by Mr. W. R. DAVIDGE. The chair will be taken at 5 o'clock instead of 8 o'clock.

WAR ITEMS.—The Tribunal of Fife has refused exemption to the gardener at Wemyss Castle, Fife, the seat of Lady EVA WEMYSS. It was stated that he was the only member of the staff left, and that the garden was to be largely devoted to market gardening.

—2nd Lieut. R. S. ("Gin") TURNER, of the Royal Flying Corps, who has been at the front since the commencement of the war, is reported missing after taking part in an air raid near Ypres on the 9th inst., and grave fears are entertained of his safety, no further news having been received. Lieut. TURNER is the youngest son of the late Mr. HARRY TURNER, of the Royal Nurseries, Slough.

—The report of a French air raid on Metz-Sablons Station recalls the fact that on this site was for many years the world-famed nursery of SIMON LOUIS FRÉRES, which has distributed many new plants, and has been famous for one of the finest collections of fruits in Europe. After the war of 1870 the German Government paid the proprietor a large sum for the nursery, and built the enormous railway station which will be remembered by those who have passed through it. The name of the nursery is commemorated by the curiously variegated Red Currant, *Gloire de Sablons*.

IMPORT OF FLOWERS INTO GERMANY.—The German Government has decided to prohibit the import of luxuries. These include cut

flowers, and the trade in "enemy flowers" through Switzerland will be brought to an end. The prohibition will also deal a severe blow to the Dutch florists. Since the Mediterranean flowers were practically unobtainable in Germany, large consignments were taken from Aalsmeer, where the prices rose to an unusual height. As Dutch horticulturists largely depend on their export trade, much anxiety prevails amongst them, for there is, in the present circumstances, little hope of finding any other foreign market.

PUBLICATIONS RECEIVED.—*Landscape Gardening as Applied to Home Decoration.* By S. T. Maynard. (New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd.) Price 6s. 6d.—*The British Fern Gazette*, March, 1916. (The British Pteridological Society, Kendal, Westmorland.)—*The Fruit Grower's Year Book.* (London: The Cable Printing and Publishing Co., Ltd.) Price 1s. net.—*Garden Pests and How to Eradicate Them.* By Howard Clements. (Bristol: The Colston Publishing Co., Ltd., 4, Colston Street.) Price 1s. net.—*First Annual Report of the Experimental and Research Station, Nursery and Market Garden Industries Development Society, Limited, Turner's Hill, Cheshunt, Herts.* (Cheshunt: C. Bunce, the Cheshunt Press.)—*The Academy of Natural Sciences of Philadelphia, Annual Reports, 1915*—*Symon's Meteorological Magazine for March.* (London: Edward Stanford, Ltd., Long Acre.) Price 4d.—*The Public Parks and Gardens of Birmingham.* By Robert K. Dent. (Birmingham: City Parks Committee, Council House.) Price 1s. 6d.—*Round the Year in the Garden.* By H. H. Thomas. (London: Cassell & Co., Ltd., La Belle Sauvage.) Price 6s. net.

THE MARKET FRUIT GARDEN.

RESULTS OF LIME-WASHING EXPERIMENTS.

THE first of the experiments with lime and other washes was made on January 24 and 25. No rain of any consequence followed for seven days after the latter date—only 0.05in. Therefore, there was ample time for the substances to dry on the trees. But after February 1 an extremely wet period set in, and it was not long before most of the lime was washed off the smaller branches and twigs. At the end of February the order of the greatest quantities of the stuffs remaining in the trunks and larger branches was as follows:—

- 1.—20lb. lime alone to 10 gallons of water.
- 2.—20lb. lime and 2lb. size to 10 gallons of water.
- 3.—20 lb. lime and 1lb. cement to 10 gallons of water.
- 4.—20lb. lime and 2lb. borax to 10 gallons of water.

Lime-sulphur of winter strength was also tried in the first set of experiments, alone, with 2lb. size to 10 gallons, and with 1lb. cement. The lime-sulphur alone has stuck on the trees best, followed in the order given, by the same stuff with cement and with size respectively. The other trials were made as soon as a dry day came, after some acetylene gas refuse had been obtained, namely, on February 9. Rain on ten consecutive days followed; so these trials had not much chance of success. The order of merit as tested by the proportions of lime remaining on the trunks and main branches of the trees at the end of February is as follows:—

- 1.—22½lb. lime alone to 10 gallons of water.
- 2.—11¼lb. lime and 11¼lb. acetylene gas refuse to 10 gallons of water.
- 3.—22½lb. lime, 2lb. size, and ½oz. potassium bichromate to 10 gallons of water.
- 4.—22½lb. acetylene gas refuse to 10 gallons of water.

The gas refuse alone settled at the bottom of the sprayers, and blocked them, and what we could get out was in "blobs," which spotted

the branches, but did not cover them. Mixed with lime this stuff was less troublesome, and covered the trees passably, but still caused so many blocks in the sprayers that it was condemned for use in the future. The gas refuse had been in a heap exposed to the weather where it was made. Perhaps fresh refuse would behave better. The main point brought out by the experiments is that lime alone or lime-sulphur alone sticks on the trees better than when mixed with any of the other materials tried.

RESULTS OF STORING APPLES.

Up to the end of January the prices of Apples had not risen above those current just before Christmas, and it was feared that storing would not pay this season. In February, however, an advance took place, and Bramley's firsts, which would have made only 5s. to 6s. a bushel in November realised 7s. to 8s. in the last week of February and the first week of March. The Apples kept remarkably well up to the end of January, and then began to rot somewhat extensively. Newton Wonder and Dumelow's Seedling (Wellington) kept well into March. The former is a better cooking Apple than Bramley's; indeed, it is the best cooker known to me. Dumelow's Seedling cooks remarkably well, but requires about twice as much sugar as Newton Wonder needs.

SETTING-OUT BRANCHES OF YOUNG TREES.

In training young fruit trees of an upright habit of growth, many branches growing too closely inwards may be saved to make arms of the trees, instead of being cut out, by setting them out in each case by means of a stick of the proper length, attached by a loop of string to an inner branch or the trunk at one end, and to the branch to be set out at the other end. A good many young President and Belle de Louvain Plum trees have been so treated this season to great advantage. By the way, the latter appears to be a very vigorous grower, and correspondingly slow to fruit. President also grows well, but shows a tendency to fruit early, so that its growth is checked if it is allowed to fruit freely too soon. *Southern Grower*.

VEGETABLES.

BRUSSELS SPROUTS.

How strange it is that amateurs do not fully realise the value of this vegetable as a crop for winter use. From October until April Brussels Sprouts are in season, and one well-grown plant will give upwards of one hundred Sprouts. The chief mistake made in cultivation is that of sowing the seed too late, thus depriving the plants of a long season of growth, which is the all-important point. If seed be sown early in March in a gentle heat this early start will enable the plants to grow from 3 feet to 4 feet high, the Sprouts forming before autumn. But too often the plants are raised from seed sown in the open in April with the Broccoli. Another mistake is to plant them between rows of Potatoes, even late varieties, which grow so large that the Brassicas are deprived of light and sufficient space to allow a free development of stem and leaves. An open site should be chosen, and one on which no member of the Brassica tribe grew during the previous season is preferable. This last point, however, is not essential, as I have proved over and again, provided that the ground is heavily manured and deeply dug in the autumn. For instance, a crop of summer or autumn Cauliflowers may precede the Brussels Sprouts with safety. Allow plenty of space between the plants, the rows 3 feet and the plants 2 feet apart.

When the seedlings show through the soil place the box or pan close to the glass in a temperature of about 55°. Directly the plants are

large enough to handle prick them out into boxes of rich soil or into a shallow frame, which contains a two-inch thickness of decayed manure or leaves, into which the roots will run through the two inches of soil on the top. This will enable the plants to be lifted with a trowel, securing to each a good ball of earth attached to the roots at planting time. Brussels Sprouts will grow in any kind of soil, provided it is properly cultivated, though a strong, deep loam is best. Keep the surface soil well stirred during

ZONAL PELARCONIUMS.

THE signs of the times indicate a revival in the popularity of Zonal Pelargoniums. I confess to have retained for the flowering section a warm affection, which dates from the time when the diminutive Tom Thumb and the pretty pink-flowered Christine were regarded as aristocrats among "bedders." The former was raised in or about the year 1842, the latter ten

produce a strain of plants the individual flowers of which were perfectly circular, the first half-dozen varieties being offered for sale in 1871. Compared with the others, these were so attractive that I propagated every bud I could find, cutting off a leaf and a small portion of the stem along with the bud, and effecting the rooting process in a pine pit. They failed altogether as bedding plants, and as pot-plants were superseded by the strain obtained by Messrs. Pearson of Chilwell, which was a blend of the Zonal and



FIG. 72.—PELARGONIUM INQUINANS: FLOWERS VARYING FROM INTENSE SCARLET TO ROSE COLOUR AND WHITE.

the summer, and apply water freely during dry weather, with a syringing overhead in the evening after a hot day.

A stout stake to each plant will ensure straight growth and prevent the Sprouts from being splashed with soil during heavy rains.

If one variety only is grown, Exhibition will produce the heaviest crop, but where small buttons are preferred, Scrymger's Giant may be chosen. *Practical.*

years subsequently, and, notwithstanding the serious drawback of this variety seeding profusely, both retained their hold on the affections of gardeners for a very long period. It is scarcely credible now that Christine, Vesuvius and Madame Vaucher (the latter a poor white) were in some establishments grown so extensively in pots for house decoration that structures were set apart solely for their accommodation. A Dr. Denny, of Stoke Newington, was the first to

Nosegay sections. "Geraniums have a long history, the parents were *Pelargonium zonale* and *P. inquinans* (see fig. 72). *P. zonale* was in the collection of the Duchess of Beaufort as early as 1710, and *P. inquinans* in Bishop Compton's garden in 1714. The first was usually called the "Horseshoe Geranium," from the shape of the coloured zone in the leaf, though Bradley mentions it as the "Painted Leaved Geranium." The latter is the Old Scarlet

Geranium, and from these, probably without any admixture of other species, our present race is derived. Nosegays, those with very starry flowers and numerous blooms in a scape, are supposed to have originated in *P. Fothergillii*. Miller states that both species attained to a height of 6 to 10 feet, that they were preserved in green-houses in winter, and were placed in summer out-of-doors, where they brightened the ever-green plants, such as Myrtles, with which they were associated.

I daresay few of the present generation of young gardeners have ever seen a "Nosegay" Pelargonium, such as *Stella* or *Rival Nosegay*, both of which were popular forty to fifty years ago. The habit of growth was more dwarf than that of the "Scarlets," the trusses contained a very much larger number of pips, and they were more floriferous. The Chilwell strain, as is well known, combines these qualities with the circular pip of the Scarlet Pelargonium, and flowers almost without intermission, a quality that makes it valuable for winter decoration. At the same time, the people of those days were not without their "Geraniums" in winter. Cowper sings of them in *The Task*; and a writer in Vol. II. of *The Floricultural Cabinet* over eighty years ago provides quite practical instructions for the production of plants to flower all the winter. It is remarkable that several of those named are species. I have always made a point of having a collection to provide plants and flowers during the autumn, winter, and spring months. A brief recital of the methods employed may be of interest. It was usual at one time, and is perhaps still, to propagate in the autumn previous to that in which the plants are required; but there is nothing to be gained thereby, and labour is unnecessarily increased. With reference to the time for taking cuttings, as they are rooted in a high temperature, it is well to wait until growth has recommenced on the plants, roots being produced much sooner when the cuttings are soft.

The cuttings root well several together in pots and boxes, or singly in small pots. For a small quantity, the latter is the better method. The cuttings should not be inserted too deeply in the sandy compost or damp may destroy them. The plants receive two shifts—one into 4-inch pots, the second into 6-inch ones, in June, when the plants are standing in the open. An older race of gardeners grew Pelargoniums in a sandy soil, and kept them in a half-starved condition. The present method, however, is to treat them very much like Chrysanthemums. They must be removed early in autumn into a cool, airy structure, since, if subjected to rain and heavy night dews, the foliage suffers. I sometimes grow plants a second year. These are turned out into frames, when they are no longer wanted, in late spring, and in June the balls are reduced to about the size they were when in 4-inch pots, all roots cut back, and the plants repotted into the same pots. These plants are more floriferous than yearlings. They produce smaller trusses, but by reducing the shoots a better class of flower is obtained. The winter treatment is similar to that given to Cyclamens and Primulas, with which they are grown. They can be used for house decoration, and must be changed at no longer intervals than five to seven days. They vary in value, both as to colour and as to flowering, one of the best varieties in every respect being *Dryden*. To provide large plants, all that is necessary is to pot those required into 8 or 9-inch pots in May, and see that the shoots are properly tied out. Good plants can be grown on without repotting, with a provision of manure from time to time, weak growths being removed, and the tip of each shoot beyond every pushing truss being pinched off. One of the labourers here used to get a pair of plants from me each spring, which he cultivated in summer in the same pots, and exhibited in autumn, the plants occasionally measuring 3 feet across. *R. P. Brotherton*.

CULTURAL MEMORANDUM.

PROPAGATION BY CUTTINGS.

THE time having arrived for the propagation of many subjects for bedding and other purposes, there are certain matters that may well engage the gardener's attention.

In the first place it is probably true that where large numbers of plants are raised from cuttings gardeners are apt to be over-anxious and start propagating too early.

I well remember when we used to commence in March to propagate such plants as *Verbenas*, *Alternantheras* and *Lobelias*, with the result that the *Verbenas* invariably mildewed, and it was difficult to obtain the number required by bedding-out time.

The advice given in "The Flower Garden" article on p. 114 on the propagation of *Ageratum* and *Heliotrope* was premature. *Ageratum* roots like "weeds," and unless one is very short of stock, cuttings struck a month before they are wanted for bedding-out make ideal bedders in that time, and unless the latter are wanted for standards or extra-sized plants, a month later will do better than starting now. Early struck cuttings get crowded, and take up too much valuable space before they can be removed to frames; they get pot-bound, a condition that prevents them "getting away" for some time after being planted out. This applies also to such plants as *Coleuses*, *Irisines* and *Lobelias*. Some few years ago I took charge of a garden in Lincolnshire in the early part of May, and I found a quantity of store plants of *Alternantheras*. They were stunted and in flower, and with only a few "hard" cuttings on them, and were thrown away. A friend offered to send me some from his stock, and during the few days that elapsed before their arrival by post I explored some hot-water pipes that came from the stove to some heated pits, and having opened up the ground and exposed the piping, I placed a single-light frame over. I then put some fine meshed wire netting over the pipes, and afterwards half-filled the frame with rough, strawy litter and leaves, finishing up with leaf-soil, and a light, fine compost, with a layer of sand on the top. The light was placed on closely, and I awaited the cuttings. In the course of a few days I received about 1,500 clean, healthy cuttings, and by this time the frame was in an excellent condition. I did not even trouble to make the cuttings, but dibbed them in rows roughly. The result was that in four days they were rooted, and by the time they were wanted in June I can honestly say they were the best plants I had ever handled.

Zonal and scented-leaved *Pelargoniums* strike freely now if placed seven or eight cuttings in a pot (5-inch), well watered in, and placed on a shelf in the stove. It is as well, if the cuttings are sappy, to let them wilt slightly, so that the cut portion becomes dry.

Naturally, most soft-wooded bedding plants are best rooted in a propagating pit, or in some improvised structure where they may be kept close for a few days, but the employment of more heat than is necessary tends to weaken the cuttings.

The women folk in many a cottage are very successful with their "slips" of *Fuchsias* or "Geraniums," and while it is necessary in many instances to have a "heel" attached to the cutting, other plants are not particular where they are cut, and will root readily without being trimmed to a joint. What appears most necessary is that all stock for propagating purposes should be grown on freely until the growth has matured slightly, flower-heads being kept down, and side growths encouraged, until one has a sufficiency of cuttings.

Every propagator has his particular fancy, and I do not like too much "leg" in a cutting. I have seen *Pelargoniums* with three joints, and

measuring 6 inches long, whereas if the stock is sturdy, one joint is sufficient, and the same applies to most plants, but it is desirable to retain as much foliage as possible. Do not overcrowd cuttings, and when inserting them let a little silver sand trickle into the hole after the dibber is withdrawn. Do not insert the cuttings too deeply.

I remember serving a head gardener whose hobby was the propagation of half-hardy plants, and frequently on his asking me to take them to the propagating-pit, a slight gust of wind has displaced them on account of their being dibbled in so slightly, but nevertheless he was always successful, even with that difficult plant *Luculia gratissima*. Plants of a succulent character, propagated from offsets or single leaves, need a longer period to root. Some years ago I had to raise annually a stock of 600 *Centaureas* from cuttings. The most successful way of raising these somewhat difficult plants is as follows:—Towards the end of August select all the weakest cuttings, and take them off with a heel, then with a very sharp knife trim them neatly, rubbing off the woolly substance, and reduce the leaves. Place them in 6-inch pots, putting about eight cuttings around the edge of the pot, water them, and plunge the pots to the brim, in ashes, in a cold frame under a north wall. If there are no signs of damping keep the lights closed, and in six weeks they will have rooted, but do not pot them singly until spring; rather let them winter in a cold vinery.

In regard to *Gloire de Lorraine Begonia* I may mention that, being short of suitable cuttings last year, I made up the number with a few main shoot cuttings. Naturally these did not throw up any suckers from the base, but grew away on a single stem up to 3 or 4 feet high. I kept the flowers picked, and the result was that the plants made nice standards. I should say a few grown like this would prove useful where grouping is done. *Geo. Dyke, Guilsborough Hall Gardens, Northampton*.

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

FROST AND THE PLANTS' AWAKENING.—(see pp. 134, 143).—The mnemonic theory cannot be said to explain the vagaries of plant awakening. Frost, or intense cold, in the same way as extreme dryness, has undoubtedly a vast influence on vegetation, but neither is sufficient of itself to account for results which are common knowledge. We are in the midst of the bulb-forcing season, and so erratic in the time of flowering are Tulips, though subjected previously to frost and extended periods of low temperatures, that it is rare to have every bulb in any pot to flower simultaneously. Probably, where six or nine are in each pot no two will open at the same time, and it is a well-known fact that commercial growers, to please their customers, only pot the bulbs when these have reached the flowering stage in order to have all expanded. Similar conditions are evident not only in forced material, but in all kinds of vegetation. There is, too, the maturation of fruits to be explained. I have still Ribston Pippins that have not attained dead ripeness, yet it is not uncommon to pick fruit grown on the same tree perfectly mature in late October. It is a mistake to assume that the progress of vegetation is stopped during intense cold. It is a well-established fact that Wheat grows during frost, especially when the ground is under snow, and few interested in flowers must be unaware how Snowdrops, *Eranthis*, and *Narcissus*, to mention only a few, continue to extend growth under similar conditions. It is perhaps less well understood that trees and shrubs never wholly cease growth during winter, whether roots or buds. Close observation, however, proves this to be the case. What we term the resting period is therefore not a period of

complete inactivity, but only of activity reduced to extreme limits. Very many years ago my interest was attracted by the behaviour of Carnations, both *Souvenir de la Malmaison* and *Border* varieties, during the winter months. To appearance growth was at a standstill, yet by examination from time to time there appeared quite a definite, though infinitesimal thickening of the stems, which assumed a marked form at the point where growth had apparently terminated in autumn, and when the bulbs were examined there was obvious a continuous extension of the roots. Few of us need be told that it is possible to destroy the perpetual character of that section of Carnations by forcing flowers to open in a high temperature. This is termed exhaustion, meaning that the plant is incapable by want of energy or vitality to produce more. Yet we find the perpetual habit to be indefinitely extended by the simple method of growing the plant in a low temperature, so that it is not really a matter of exhaustion, as of affording time to mature crops of flowers successively. In the past winter ours have been grown almost without fire-heat, yielding necessarily a less crop of flowers in mid-winter, but at the present moment the prospects are unusually bright. The immediately rapid progress of vegetation subsequent to intense cold I would therefore attribute not so much to a change due to cold, because one's observation shows that the progress of the flowers of the same kind of plants is markedly dissimilar, as to the previous condition of vegetation. We find exactly the same thing happens when shoots of flowering shrubs are cut and opened in hot water. These must have attained a forward stage to respond to the applied heat, and it does not matter whether the weather is very cold or not previous to cutting; the results are invariably the same. A very curious effect followed the frost of October 5 last year, which destroyed the buds of certain *Chrysanthemums*, early varieties and late ones that had not set escaping, while others, mostly medium in flowering, had the buds destroyed. Yet scarcely any failed to flower, another crop of buds having formed under that which had been killed, so that I still have a few left in bloom. *R. P. Brotherton*.

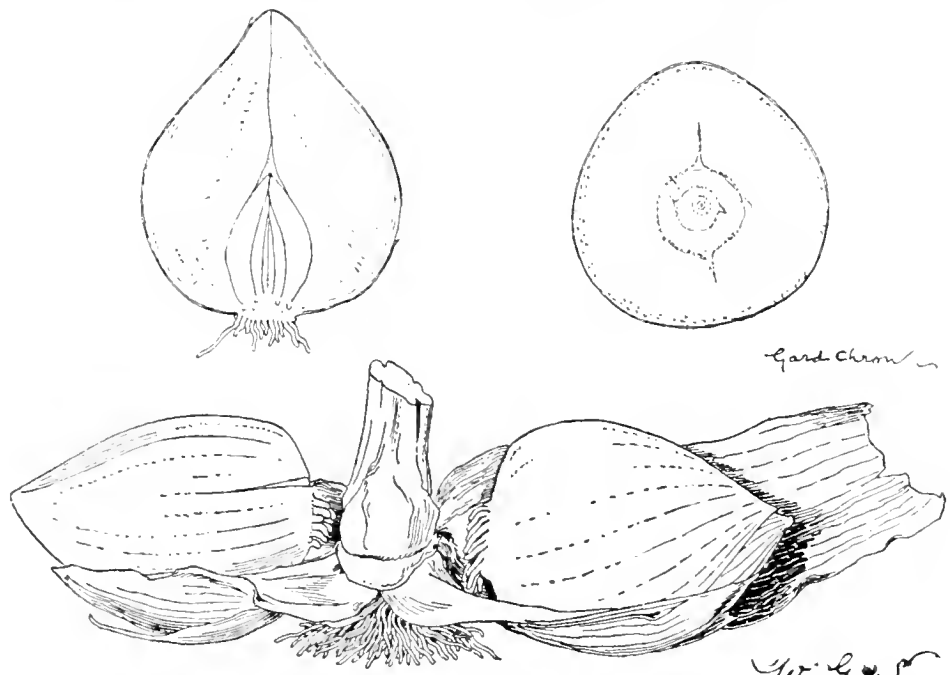
ENGLISH ELM.—We notice in the charming article, "Notes from a Cotswold Garden," on p. 71, it is stated to be hardly possible to procure the English Elm, *U. campestris* L., true, on its own roots. For three or four years past we have been supplying true English Elms transplanted from suckers, and even exporting some to Russia. *Hillier and Sons, Winchester*.

NEW FUNGICIDE.—Messrs. Eyre and Salmon's ammoniac polysulphide wash (*Gard. Chron.*, March 4, 1916, p. 132), like other polysulphide preparations, has the admitted disadvantage of attacking copper apparatus. May I make the suggestion that it might be possible to overcome this by more or less saturating the stock solution with copper sulphide. This probably might be most satisfactorily attained by placing the metal, as filings or turnings, in the solution for a while, as the addition of salt, such as the sulphate, would lead to the formation of ammoniac salts, which might have a withering action on leaves. By exposure the copper would probably eventually take the form of sulphate through oxidation. *H. E. Durham*.

EXTERMINATING COCKROACHES.—In "Answers to Correspondents" of last week's issue, p. 166, excellent advice is given with regard to destroying cockroaches, but the one plan that might be most effective is not mentioned. I would advise catching by hand or killing with a label at night. This has been done here with very good result. One hundred cockroaches, I believe, have been caught or destroyed on one evening by two assistants in an hour and a half, and this number would be regarded as good by any method. I have been led to this idea by the fact that cockroaches are sometimes required alive for laboratory use, and by merely catching them alive for this purpose they have been so far exterminated from our plant-houses that it has been difficult to meet demands. Catching is quite easy with

a strong light, by which they seem to be dazzled. Only a night or two ago I inspected a cockroach with a lighted match, and he remained for close inspection while I held the light to his face. Scuttling away must also be expected, of course, but they are not very long in coming back, and after visiting another house or shed it is easy to return for another hunt. Complete extermination, I fear, can never be expected. *R. Irwin Lynch, Botanic Garden, Cambridge*.

LEEK BULBS AND ONION BULBS.—I was not aware that the garden Leek (*Allium Porrum*) ever became proliferous, till pointed out by *Western Wight*, p. 143, although I have been aware that many of the species of *Allium* are naturally so every year. The three native British Leeks are proliferous, particularly *A. Babingtonii*, which bears bulbils as large as marbles on the flower-heads, and this is constant under cultivation. *A. Scorodoprasum*, the Sand Leek, produces many small bulbils, and the form of the Wild Leek, named *A. Ampeloprasum bulbiferum*, bears a few bulbils on the flower-head, where it grows wild on cliffs in Guernsey. The most common *Allium* throughout Great Britain is *A. vineale compactum*, and this rarely, if ever, blooms, but produces a globular mass



73.—DEVELOPED LEEK BULBS AT THE BASE OF THE OLD FLOWER-STEMS.

of bulbils instead. Field Garlic, and its near relative, *A. carinatum*, are always bulbiferous, with a few flowers amongst the bulbils. This also applies to the South European, *A. scorzoneraefolium*. Nor must we forget the Tree Onion and Perennial Tree Onion, sometimes grown for the purpose of picking their top bulbils. The production of small or large bulbils at the base is a common feature of many of the wild Leeks, the Potato Onion, Garlic (*A. sativum*), and the Shallot (*A. ascalonicum*). The latter is everywhere cultivated, and some are of the opinion that it is only a form of the Onion, its native country being doubtful or unknown. We originally had it from Ascalon, in Palestine, and both its common and botanical names are derived from that town, the Askelon of the Old Testament. Scallion and Eschalot are other forms of the word, now reduced to Shallot. The wild Leek produces two large bulbs at the root and the Shallot quite a number, sometimes named cloves. The production of Leek bulbs by artificial means, mentioned by Mr. Bartlett, p. 163 (see fig. 73), recalls the fact that something similar may be done with Onions. Every year a certain proportion of autumn sown Onions throw up flower-stems in the summer, and many people pull them up as useless. This is a mistake, because a large bulb may be secured at the side of the original one, if the flower-head is pulled off

when quite young, retaining the stout fistular stem, which remains green till August. By that time the original bulb will have disappeared, but the lateral one will be 2 inches in diameter, more or less, according to treatment and feeding. *J. F.*

FEBRUARY RAINFALL.—Rain fell here every day until the 21st of the month, the maximum being on the 3rd inst., with 1.35 inch. The total for the 21 days was 6.16. *Nort hDevon*.

"THE R.H.B. JOURNAL."—In the *Journal*, the Society has a medium of great value, and it probably represents for many Fellows the chief reason for their membership. The cost of printing and postage, some £22.618, is a large sum, but one which should not be grudged, as it is the means of disseminating information of great value and interest. In these days, when every expenditure is rigidly scrutinised, one cannot but ask if the *Journal* is playing so important a part as it might in the horticulture of this country. Granted the same expenditure of money and editorial ability, could a more valuable result be attained? In the opinion of the writer, much could be done to place the *Journal* on a higher plane. As one who owes much to the editor's careful reading of proofs, and valu-

able suggestions in the past, he hastens to say that no criticism is offered of the way in which he has handled the material submitted to him. The criticism is rather of the material itself. It is obvious that the first object of the *Journal* is to form a record of the Society's work, and this is responsible for quite half of the volume. The book reviews are a valued feature, and should not be reduced. The "Notes and Abstracts," despite periodic criticism, are of great help in summarising the world's research, but here a more systematic treatment would be of great use. If one is anxious to find an early description or illustration of a new plant, it may or may not be found, and it seems that all new plants or fruits should be recorded under a distinct heading, "New Plants" or Fruits. A simple reference with no description would suffice, as anyone searching for exact information will (or should) turn in any case to the original publication. The subdivision into "Alpine," "Herbaceous," and other groups would, of course, be necessary. Important descriptive articles, alterations of names, etc., should be also recorded under the separate headings. Where a plant is adequately treated in other publications (such as *Daffodils* and *Roses*), it might be well to omit it for reasons of space. To get such work done accurately it would be doubtless necessary to farm it out to sub-editors, and

I do not think it would be difficult to find such men. Most of us who are interested in one special branch keep an eye on all horticultural literature, and a record for their own reference. In the other departments of plant pathology, manuring, etc., etc., the same system would apply, and here the abstracts would have to be more detailed, but should be kept within, say, a dozen lines. No worker should be encouraged to accept abstracts in place of authorities. It will at once be urged that this will entail much extra space in the *Journal*, and the extra expense may not be justified. The writer would find this space by the drastic method of throwing over the accepted plan that a lecture delivered before the Society must necessarily be printed. Much space has been wasted in the past by printing information which can be found in any text book. He has himself fallen a victim to this system. As in other societies, a publications committee should decide this point. The present Library Committee, duly strengthened on the scientific and other sides, could perhaps be given such work. Further, the writer would suggest for the consideration of the Society that popular lectures given alternately with the usual lectures would be widely appreciated. It is rather pathetic for a lecturer who has been discoursing on the "Functions of Nitrifying Bacteria," let us say, to be questioned at the end of his remarks as to the best manure for Broccoli. But it shows that a popular lecture by a good man would be widely appreciated. If such lectures were given at intervals, and not printed, they would satisfy a need and provide more space in the *Journal*. How should this space be filled? By the publication of original research work. This is a side of horticulture which has been somewhat neglected of late. In the early days of Mendelian research the *Journal* played an important part, but in recent years this has not been so. Good monographs, where they represent real work, and not merely scissons and paste dexterity, should be welcomed by the Society, and in better times money should not be spared in their illustration. The Society should invite research workers to use the *Journal* as a means of publication, and keep in touch with those who are doing work which has a horticultural value. In making these constructive criticisms and suggestions, the writer has but the object of making the Society, through its *Journal*, occupy a still higher place in the world of horticulture, and he hopes they may be discussed by readers of this paper in a like spirit. *Critic.*

THE FERTILISING VALUE OF SNOW (see p. 143).—J. N., in his "Confessions of a Novice," theorises on this subject very agreeably in your last issue, but his suggestion does not leave one convinced. Rain is rough, and much is wasted, so far as "the place beneath" on which it falls is concerned, but I imagine that once the precipitation has passed the crust its roughness has gone, and it gently percolates, adequately moistening the earth as far as it goes. The theory that the winter rains are stored in a vast reservoir for spring and summer use has, I know, the sanction of long belief, and is very pleasant, but it is debatable. But, so far as our country is concerned at any rate, the value of snow cannot rest on the moisture it supplies, for the rains are quite sufficient during the season of snow, and probably our average yearly fall of snow does not exceed a foot, which, when converted into water, would become little more than an inch. Now, as snowflakes contain about nine times as many volumes of air entangled among their woolly crystals as they contain of water, may not the fertilising value of snow be due to this imprisoned air? The atmosphere, besides being composed of a great proportion (79.02) of nitrogen, contains, in certain localities, such valuable gases as nitric acid and ammonia, as well as solid particles of organic matter, necessarily in a finely divided state, and it seems quite possible that the melting snow carries these essential constituents into the soil, converting them into valuable plant food. *J. C. Bartlett.*

GARDENERS AND EXPERIMENTS.—The note by Mr. E. T. Ellis (see p. 93) has interested me, and I quite agree that there is much in gardening

which needs clearing up by experiment; but the average gardener is not a suitable person for the work, as he is apt to form wrong conclusions after carrying out an experiment, with the result that he bases his ultimate practice on the supposed certainty that his favourite idea is proved beyond a doubt, and the fruits of his way of reasoning are apt to be disastrous. When an employer will enter into the spirit of the thing, and is prepared to share the consequences, there is not much danger; but employers, as a rule, do not forgive failures. I have seen so many wrong conclusions come to, even by clever men; therefore, though I do not wish to discourage experiment, I advise caution. It requires a particularly well-balanced judgment to prove a thing by experiment. I knew one of the cleverest Grape-growers in his day, who had a house of Black Hamburgh vines, and the fruit of one of these vines was always much better than the rest. This particular vine was at the end of the house, and underneath it was a large water tank. This water tank had all the credit for the superiority of the fruit, and nothing could convince the cultivator to the contrary, and he followed up his belief by damping

THE PAPER COMMISSION.

IMPORTANT RESTRICTIONS.

OWING to the decision of the Government to impose restrictions upon the importation into this country of paper and paper-making materials there will be a shortage in the supply of paper, calling for the most rigid economy.

Publishers have been forced to use far more paper than is needful by the practice of distributing copies of their papers "on sale or return." The waste in this manner must be reduced to the minimum, and we ask, therefore, all readers of the "Gardeners' Chronicle" who desire to have copies supplied to them each week (and are not already receiving them direct from the office) to give their local newsagent a definite order to this effect.

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his houses heavily after closing, maintaining that colour and bloom were improved by the practice. The vine at the other end was the next best, and that solved the problem, as far as I was concerned. Both these vines had more light than the rest, because the ends of the house were glazed, the roots had more room, and as the border was elevated, with the ends of it exposed, they were better aerated. They also had more brickwork against them, and as I believe there was a shortage of lime in the border, the roots fed on the lime in the walls. The borders were both inside and out. Another case of vine culture occurs to my memory, and this time it was Muscats, which had been pronounced marvellous productions. With a change of hands they were fed up immoderately with dung from a covered cattle yard, which was laid in the border several inches thick, and the vines produced large bunches with large berries for a year or two, and took first prizes at the principal shows. But after a time there was a change, for the berries, when ripe, turned a pinkish colour and soon rotted. The grower was advised to try a different manure. He selected what was called a "silicate manure," and the Grapes soon improved. He wrote a testimonial praising up this manure immensely, and coming, as it did, from the gardener of a well-known nobleman, it doubtless helped the

proprietors considerably. Now, this particular manure has been proved to be of very little value, but it suited these vines because of its lack of manurial ingredients. They had been receiving too much manure and too little aid at the roots, and they revelled in the change. A few years ago certain "cultures" were much advertised—one sort for Peas, another for Beans, and many particular ones for almost every crop. If you used the Pea manure for Beans, you must not expect the crop to succeed. I was shown some Tomato plants by a grower, who proudly pointed out how much superior the plants were which had received the special Tomato manure. Here, then, was a case of bona-fide experiment. I am afraid I damped his ardour by saying that a pennyworth of nitrate would have produced similar results, but it would not add to the fruitfulness, and neither did the special manure. Lack of initiative, as mentioned by Mr. Ellis, is not the only fault of Englishmen, including gardeners; we are also easily gulled by quackery. The average gardener, too (I am not alluding to those men at the top of the tree, whom we all admire and for whose knowledge we are eager), does not read scientific works, from which there is so much to be learned. He has just one way of doing a thing, because he was taught to do so by his only tutor, and this tutor had a great reputation because he was very successful in growing, perhaps one particular class of fruit, vegetables, or flowering plants; therefore everything he did must be right. Perhaps he was a good *Calceolaria* grower, but did not know the best way to prune a tree. I find men who have only been under one tutor very slow to take in new ideas, or to give a good reason for any particular way they may have of doing their work. Personally, I never would consider a particular way of working unquestionable, however venerable the plan might be, unless I could see a reason for that particular way, or prove to my own satisfaction that it was the best. Sometimes I have gone too far in this respect, so here again caution is needed. An experiment by one person, however well qualified that person may be, should not be thought beyond question till it has been tested by an independent worker. The establishments now set up in this country for the purpose are much better fitted to carry out experiments, because the necessary appliances are at hand, and more than one person is concerned in any experiment. Even the cleverest people are apt to come to wrong conclusions. I recently heard a paper read by one of the cleverest gardeners in this or any other country, a man of more than 65 years' experience, but still young and energetic. In speaking of a Pear tree trained to a wall, which produced exceedingly fine fruit one season, he gave his opinion as to the cause. A hotbed was made about 6 feet from the wall, and the lecturer came to the conclusion that the extra fine fruit was produced from the effects of the soil being warmed by the hotbed, and that our soil was too cold for fruit trees. Now, there are other ways of looking at the matter. Although the constituents of the manure in the main body of the bed could not be washed down into the border, that on the outside, including the water which ran off the lights of the frame, would certainly be. Then, again, is it possible that the carbon dioxides emitted from the decaying manure might have acted beneficially on the leaves of the tree? Another thought occurs. Generally the border would be dug and cropped, many of the young roots would be cut off, and the vegetables would rob those which were left. This season the young roots had a respite, and round the edges of the hotbed, where they would receive both food and shelter, they would increase abundantly. *Wm. Taylor.*

"YELLOWS" IN CARNATIONS. I read with much interest in your issue of March 11 the views of Mr. G. L. Peltier, of the Horticultural Department, University of Illinois, upon the Carnation disease, known in America as 'Yellows.' In my book, *The Perpetual Flowering Carnation*, I dealt, I venture to think, almost conclusively, with this disease. The 'Yellows' is the same disease that we know as Bacteriosis (*Bacterium dianthi*), and, to put the whole matter into a nutshell, it is

a sign of deteriorated constitution, brought about by a hundred and one causes, the use of improper fertilisers, and not keeping the plants free from insect pests being undoubtedly the principal, whilst too rich a soil and insufficient ventilation play their part. Overwatering the plants in dull weather undoubtedly aggravates the disease. The old variety Enchantress proves this fact. When you get a stock which has been carefully selected and cultivated for a number of years, it is perfectly free from this disease. Some seedlings show signs of the 'Yellows' (Bacteriosis) when only a few months old, but these are constitutionally weak, and should be discarded. However, as a general rule, seedlings are free from this disease, and if only seeds were always selected from plants which have a robust constitution, and a rich blue glaucous foliage, much could be done to eradicate it entirely. In short, when a gardener sees yellow translucent spots on the foliage of his Carnations, which are broken down and decayed cells, and are more easily seen when the leaves are held up to the light, he knows that plants so affected must not be used for propagation purposes. Furthermore, it is a warning to him that his methods of cultivation are wrong in certain details; but the use of chemical fertilisers is being proved again and again wrong for Perpetual Flowering Carnations—they must have an organic food. All varieties of Perpetual Flowering Carnations have a limited life, simply because they have no dormant or resting period, so when a variety is old it naturally is more prone to the 'Yellows' (Bacteriosis); that is why a change of stock and most rigid selection of cuttings and parent plants is so essential. *Montagu C. Allwood.*

BEE-KEEPING.—With regard to advice given by "Chloris" in last week's *Gardeners' Chronicle*, may I be permitted to add a word? In regard to the "Isle of Wight" disease, it is now recognised that *disinfecting* is not sufficient to kill the bacteria causing the disease. Therefore the only really effective way of dealing with a hive that has been infected is to burn it thoroughly inside with a painter's blow-lamp. Make sure that the flame penetrates into all cracks and crevices of hive—do not mind if the woodwork is scorched in places, this will do no harm to the hive, and will ensure the eradication of disease. All frames, sections, racks, etc., should receive similar treatment. The wax should be burnt. The honey seems quite good and wholesome for human consumption, but should not be given to bees. By experiment, it has been proved that the disease can live in the soil and in bushes for twelve months, therefore it is not wise to start bee-keeping, presuming the stocks have been wiped out, for a full year. If only all bee-keepers would co-operate, and directly there is any sign of outbreak of disease burn the bees and burn out the hives, I feel sure we should be successful in stamping out "I.O.W." The majority of bee-keepers (those especially who keep one or two hives) do not think seriously enough of its infectious qualities, and unless they can be roused to a sense of their responsibilities in this matter the keeping of bees and the production of honey will become a lost art in this country. In country districts I have seen hives left, traps of disease and infection, in which the bees must have been dead for months. Under conditions such as these, what wonder of the disease spreads from county to county, till not a part of England is immune? *M. Kennedy Bell (Head Gardener), Botanical Dept., The University, Bristol.*

THE ANCIENT USE OF LIME.—I was much interested in the statement (page 153) that my records the ancient use of lime by Celtic tribes. Near the town of Crickhowell, and high above the left bank of the river Usk, some 2,300 feet up, is a mountain peak known as Pen Cerig Calch, which in English means the Head of Limestone. It is, in fact, a cap of Mountain Limestone surrounded by a limeless tract of country of the Old Red Sandstone system. This recognition of the presence of limestone in the descriptive old Welsh name suggests (but by no means proves) that tribes of old realised its importance and used it. If so, did they burn it? Or grind it and use it

unburnt? Perhaps these are questions that will never be answered, but evidence may be forthcoming as to how old the practice of lime-burning is in this country. The mountain in question must be one of the most southerly outcrops in Great Britain of two native plants that are suitable for use as an edging or ground-work for the peat-bed, namely, the Crowberry (*Empetrum nigrum*) and the Cowberry (*Vaccinium Vitis-Idaea*), and now that modern developments have almost driven the birds from the coal-basin of South Wales it is also one of the most southerly homes of the Red Grouse. *Harold Evans, Llanishen, Cardiff.*

Obituary.

ELIZABETH LADY LAWRENCE.—The death of Elizabeth Lady Lawrence, widow of Sir Trevor Lawrence, Bart., late President of the Royal Horticultural Society, took place on the 18th inst. in London. Since her husband's death in December, 1915, Lady Lawrence has continued to reside at Burford, Dorking. She has maintained the celebrated gardens in all their former beauty and interest, and only a few weeks ago her gardener, Mr. Bain, was an exhibitor at one of the R.H.S. meetings. Lady Lawrence took an active part in the work of the executive of the Ladies' War Horticultural Relief Committee.

EDWARD HOBDAV.—We regret to record the death of Mr. Edward Hobday, nurseryman, Cambridge, on the 9th inst., after a short illness, aged 83 years. He was a native of Hellowell, near Bromsgrove, Worcestershire. At an early age he was apprenticed in the gardens at Hellowell Grange, the Worcestershire seat of Earl Plymouth, where he spent some years devoting himself to close study and work. From thence he went to the gardens of the Marquis of Sligo, Ireland, returning later to England to take up the position of head gardener at Haverland Hall, Norfolk. Subsequently he was appointed gardener to the late Lord Ramsey at Ramsey Abbey, Huntingdon, where he remained until he removed to Cambridge. The business will be carried on by two of his five sons under the name of Hobday and Son, Cavendish Nurseries.

ENQUIRY.

Can any reader inform me whether Cattleya Hardyana, Hardy's variety, is still in existence. Any particulars concerning the plant would be greatly appreciated? *A. L.*

THE WEATHER.

WEATHER IN WEST HERTS.

Remarkably wet, dull and damp.—This was a warm week, and the first unseasonably warm one for four weeks. There has not been a single unseasonably cold night since the 12th inst., or for ten days, although some of the day temperatures during that time were below the average. The ground is at the present time of average temperature at 1 foot deep, and 1° colder than is seasonable at 2 feet deep. Rain fell on all but one day, and to the total depth of over 2 inches, making this the wettest week for nearly a twelvemonth. At 10 a.m. on the 22nd rain had been falling continuously for 29 hours, sometimes very lightly, and to the total depth of over three-quarters of an inch. This was the wettest day since the end of October last year. During the week 9½ gallons of rainwater came through the bare soil percolation gauge and 8½ gallons through that on which short grass is growing. The sun shone on an average for only 2 minutes a day, which is 3 hours 33 minutes a day short of the mean daily duration for the time of year. Light airs and calms alone prevailed during the week. During the past fortnight the direction of the wind has been almost exclusively some point between north and east. The mean amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 16 per cent. An Early Rivers' Peach growing on a south wall in my garden came first into flower on the 17th inst., which is four days earlier than its average date of first flowering in the previous thirty years, and twelve days earlier than last year. *E. M.*

SCHEDULES RECEIVED.

National Sweet Pea Exhibition, R.H.S. Hall, Westminster, Tuesday, July 11, 1916. Secretary, H. D. Tigwell, Greenford, Middlesex.

MARKETS.

COVENT GARDEN, MARCH

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal sellers, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Azalea, white, per doz. bun.	4 0-5 0	Orchids—	
Camellias, white, per doz. ..	2 0-2 6	— Odontoglossum crispum	4 0-5 0
Carnations, per doz. blooms.		Pelargonium, per doz. bunches, double scarlet	4 0-6 0
— best American varieties ..	1 6-2 6	Primroses, per doz. bun. ..	2 0-—
— smaller, per doz. bunches ..	—	Richardias (Arums), per doz. ..	2 6-3 0
— Carola (crimson), ex. large	3 0-3 6	Roses: per dozen blooms—	
— Malmaison, per dozen blooms ..	—	— Duchess of Wellington ..	—
— pink ..	10 0-15 0	— Lady Hillingdon ..	2 0-3 0
Baffodils, per doz. bunches ..	—	— Liberty ..	4 0-7 0
— Double Van Zion ..	2 0-2 6	— Madame A. Chateau ..	4 6-5 0
— Emperor ..	4 0-5 0	— Melody ..	—
— Empress ..	3 0-3 6	— Mrs. Russell ..	—
— Golden Spur ..	2 0-2 6	— My Maryland ..	—
— Princess ..	1 0-2 0	— Niphetos ..	2 6-3 0
— Sir Watkin ..	2 0-2 6	— Ophelia ..	6 0-8 0
— Victoria ..	4 0-4 6	— Prince de Bulgarie ..	—
Eucharis, per doz.	2 0-2 6	— Richmond ..	4 6-7 0
Freesia, white, per doz. bun.	1 0-1 6	— Sunburst ..	4 0-6 0
Gardenias, per box of 15 and 18 blooms ..	3 0-4 0	— White Crawford ..	2 6-4 0
Iris, Spanish, per doz. blooms ..	—	Spiraea, white, per doz. bun.	8 0-9 0
— white ..	2 6-2 9	Stock, double white, per doz. bunches ..	—
— blue ..	2 6-3 0	Tuberose, per packet, 24 blooms ..	—
— mauve ..	2 6-3 0	Tulips Darwin, mauve, per doz. blooms ..	1 3-1 6
Lapageria, per doz. blooms ..	—	— red or pink varieties, per doz. bunches ..	1 3-1 9
Lilac, white, per doz. sprays ..	4 0-5 0	— single, white, per doz. bunches ..	8 0-10 0
Lilium longiflorum, per doz., long ..	2 6-3 0	— coloured, per doz. bun.	8 0-10 0
— short ..	2 0-2 6	— red, per doz. bun. ..	10 0-12 0
— lancifolium album, long ..	—	— pink, per doz. bun. ..	12 0-15 0
— short ..	2 0-2 6	Violets, per doz. bunches ..	1 6-2 0
— lancifolium rubrum, per doz., long ..	1 6-2 0	— double, Marie Louise, per doz. bun. ..	4 0-6 0
— short ..	1 6-—	— Princess of Wales ..	3 0-4 0
Lily-of-the-Valley, per dozen bunches:		White Heather, per doz. bun.	1 0-—
— extra special	24 0-—		
— special ..	15 0-18 0		
— ordinary ..	—		
Narcissus ornatus, per doz. bunches ..	2 0-2 6		
Orchids, per doz.:			
— Cattleya ..	12 0-15 0		
— Cypripedium ..	2 0-3 6		
— Dendrobium ..	1 6-2 0		

French and Guernsey Flowers.

	s.d.s.d.		s.d.s.d.
Anemone, double red, per doz. bun. ..	2 0-3 0	Stock, white, per pad ..	—
— fulgent scarlet, per doz. bun.	2 6-3 0	Sweet Peas, white and coloured, per doz. bun.	3 0-4 0
Marguerites, yellow, per doz. bunches ..	1 6-2 0	Violets, Parma, large bun., each ..	2 0-2 6
Narcissus, Grand Primo, per doz. bun. ..	1 6-2 0	— single, per pad, 48-60's ..	9 0-10 0
— ornatus ..	1 6-2 0	— per doz. ..	2 6-3 0
St. r. per pad ..	5 0-7 0		
— per doz. bun.	1 6-—		

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.s.d.		s.d.s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches ..	7 0-8 0	Fern, French, per doz. bunches ..	0 6-0 8
Agrostis (Fairy Grass), per doz. bunches ..	2 0-4 0	— common ..	4 0-5 0
Asparagus plumosus, long trails, per half dozen ..	1 6-2 0	Galax leaves, green, per doz. bunches ..	—
— medium, per doz. bunches ..	12 0-18 0	Hardy foliage, various, per doz. bun. ..	4 0-8 0
— Sprengeri ..	8 0-12 0	Honesty, per doz. bunches ..	10 0-12 0
Berberis, per doz. bun. ..	4 0-5 0	Lichen Moss, per doz. boxes ..	15 0-18 0
Carnation foliage, per doz. bunches ..	4 0-5 0	Moss, gross bunches ..	7 0-8 0
Croton foliage, per doz. bunches ..	12 0-15 0	Myrtle, doz. bun. English, small-leaved ..	6 0-—
Cycas leaves, per doz. ..	3 0-12 0	— French, per doz. bunches ..	1 0-1 3
Eulalia japonica, per bunch ..	—	Smilax, per bun. of 6 trails ..	1 0-1 3

REMARKS.—Lilium longiflorum and Arum (Richardia) were scarce at the beginning of last week, but at pre-

sent the market is almost overstocked with these flowers, which has caused a considerable drop in their prices. Larger supplies of flowers are arriving from Cornwall and the Channel Islands. The bulk of these consignments consists of Daffodils, Narcissus ornatus, N. Grand Primo, N. White Pearl, and Freesia. The flowers already begin to show signs of the end of the season and of the extra time taken in transit. This week the majority of the French flowers arrived here practically unsaleable. White Stock, which is most in demand at the present time, was quite unsaleable on arrival. There is a plentiful supply of coloured flowers, but white ones are scarce. White and blue frises are arriving in excellent condition, but the supply is limited. Darwin Tulips are more plentiful, and prices are a little easier. Little change is noticeable in Carnations or Roses. Among the latter, Lady Hillingdon is the most plentiful. Red Roses now consist of Richmond, Liberty, and Général Jacqueminot, but the best blooms on long stems are not plentiful, and are soon sold. A few Sweet Peas arrived from Gernsey this week.

Plants in Pots, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Aralia Sieboldii, dozen ..	4 0-6 0	Ficus repens, 48's, per doz. ..	4 6-5 0
Araucaria excelsa, per doz. ..	18 0-21 0	— 60's, per doz. ..	3 0-3 6
Asparagus plumosus nanus, per doz. ..	10 0-12 0	Genistas, 48's, per doz. ..	10 0-12 0
— Sprengerii ..	6 0-8 0	Geonoma gracilis, 60's, per doz. ..	6 0-8 0
Aspidistra, per doz., green ..	21 0-30 0	— larger, each ..	2 6-7 6
— variegated ..	30 0-60 0	Grevillea, 48's, per doz. ..	— —
Azaleas, each ..	2 6-3 6	Hyacinths, white and coloured, 48's, per doz. ..	10 0-12 0
Boronia Megistima, 48's, per doz. ..	18 0-21 0	Hydrangeas, white, per doz. ..	12 0-18 0
Cacti, various, per tray of 15's ..	4 0 —	— pink, per doz. ..	12 0-18 0
— tray of 12's ..	5 0 —	— blue, per doz. ..	15 0-18 0
Cinerarias, 48's, per doz. ..	9 0-10 0	— large plants, each ..	5 0-10 0
Cocos Weddelliana, 48's, per doz. ..	18 0-30 0	Kentia Belmoreana, per doz. ..	4 0-8 0
— 60's, per doz. ..	8 0-12 0	— Forsteriana, per doz. ..	4 0-8 0
Croton, per doz. ..	18 0-30 0	— 60's, per doz. ..	4 0-8 0
Cyclamen, per doz. ..	10 0-12 0	— larger, per doz. ..	18 0-36 0
Daffodils, 48's, per doz. ..	8 0-10 0	Latania borbonica, per doz. ..	12 0-30 0
Dracaena, green, per doz. ..	— —	Lilium longiflorum, per doz. ..	24 0-30 0
Erica, white, 48's, per doz. ..	18 0-21 0	Marguerites, in 48's, per doz. ..	7 0-8 0
— Ovals, 48's, per doz. ..	12 0-15 0	— white ..	7 0-8 0
— Wilmoreana, per doz. ..	12 0-15 0	Pandanus Veitchii, per doz. ..	36 0-48 0
Ferns, in thumbs, per 100 ..	8 0-12 0	Phoenix rupicola, each ..	12 6-21 0
— per 100, in small and large 60's ..	12 0-20 0	Spirea, white, per doz. ..	10 0-12 0
— in 48's, per doz. ..	5 0-6 0	— pink, per doz. ..	— —
— in 32's, per doz. ..	10 0-18 0	Tulips, scarlet, on bulbs, per doz. ..	1 3-1 6
— choicer sorts, per doz. ..	8 0-12 0	— white, on bulbs, per doz. ..	1 6 —

REMARKS.—The unfavourable weather prevents any great improvement in business in this department. There is a good supply of Genistas and Cinerarias, but only improved weather will make business at all brisk.

Fruit: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Apples—		Grapes: English,	
— Albemarle, per barrel ..	41 0-46 0	— black, per lb. ..	2 6-4 6
— English cooking, per bus. ..	8 0-10 0	— Almeria, per bbl. of 60 lbs. ..	28 0-30 0
— Nova Scotian, per barrel ..	20 0-32 0	— Cape, per 10lb. box ..	9 0-12 0
— Oregon, per box ..	14 6-16 0	Lemons, per case ..	15 0-21 0
Bananas, bunch—		Lychees, per box ..	1 4-1 6
— Medium ..	7 6-10 0	Melons, Cape ..	1 3-2 0
— X-medium ..	9 0-12 0	Nectarines, Cape, per box ..	6 0-10 0
— Extra ..	10 6-14 0	Nuts, Brazils, new, per cwt. ..	54 0-58 0
— Double X ..	12 0-16 0	— Coconuts, per 100 ..	22 0 —
— Giant ..	15 0-16 0	Oranges, per case ..	12 6-42 0
— Red, per ton ..	£20 0 —	— Californian Seedless, per case ..	23 0-24 0
— Jamaica, per ton ..	£12 0 —	— Palermo Bitters, per case ..	15 0-16 6
Chestnuts—		Peaches, Cape ..	3 0-10 0
— Italian, per bag ..	22 0 —	Pears, per case ..	24 0-26 0
Cranberries, per case ..	10 0-11 0	— Cape ..	4 0-5 6
Dates, per doz. boxes ..	4 6-4 9	Plums, Cape ..	6 0-8 0
Grape Fruit, per case ..	22 0-24 0	Strawberries, forced, per lb. ..	6 0-12 0
		Walnuts, Naples, per cwt. ..	75 0 —

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes, Globe, per doz. ..	3 0-4 0	Carrots, per cwt. ..	12 0 —
— Jerusalem, per bus. ..	2 6 —	Cauliflowers, per tally ..	8 0-14 0
Asparagus, Paris green ..	2 3-2 9	Celeriac, per doz. ..	3 0-4 0
Aubergines, per doz. ..	— —	Celery, per fan ..	1 0-1 6
Beetroot, per bag ..	4 6 —	Chicory, per lb. ..	0 4-0 6
Beans, Broad, per pad (France) ..	5 6-6 6	Cucumbers, per doz. ..	3 0-5 0
— Madeira ..	6 0-8 0	— English Beans, per lb. ..	1 3-1 6
Broccoli, Sprouting, per bus. ..	2 0 —	French Beans, Dwf. (France) per packet ..	1 3-1 6
Cabbage, per tally ..	3 0-6 0	— Beans (Guernsey), per lb. ..	1 3 —
— Spring, per doz. ..	1 6 —	Garlic, per lb. ..	0 10-1 0

Vegetables: Average Wholesale Prices—continued.

	s.d. s.d.		s.d. s.d.
Greens, per bag ..	2 0 —	Potatoes—	
Herbs, per doz. bun. ..	2 0-6 0	— Algerian, per lb. ..	0 3-0 4
Horseradish, per bundle ..	3 0-4 0	— Channel Islands, per lb. ..	0 3-0 3 1/2
Leeks, per doz. ..	1 6-2 6	Radishes, per doz. bun. ..	0 10-2 0
Lettuce, Cabbage and Cos, per doz. ..	1 0-6 0	Rhubarb, Forced, per doz. ..	0 9-1 3
Mushrooms, per lb. ..	1 3-1 6	— natural, per doz. ..	2 0 —
— Buttons ..	1 6-1 9	Savoy, per tally ..	8 0-10 0
Mustard and Cress, per doz. punnets ..	1 0 —	Seakale, per doz. punnets ..	14 0-18 0
Onions, English, per cwt. ..	23 0-30 0	Scotch Kale, per bush. ..	1 6 —
Onions, spring, per doz. bun. ..	5 0 —	Shallots, per lb. ..	0 9-1 0
— Valencia, per case ..	27 0-28 0	Spinach, per bus. ..	— —
Parsnips, per bag ..	3 0-3 6	Tomatoes:—	
Peas, per pad (France) ..	6 0-9 0	— Teneriffe, per bundle ..	10 0-16 0

REMARKS.—English Apples are still available, but not plentiful. Of overseas kinds, the variety Albemarle, from the Western States, is the most popular. There is a limited supply of Apples in boxes from California and Oregon. The first shipment of Australian Apples is expected in about a fortnight; the crop is said to be a good one. There are some good specimens of Cape Pears to be had, notably of the following varieties:—Doyenné du Comice, Beurré Superfin, Beurré Hardy, and Louise Bonne de Jersey. Among Plums, Kelsey, Japan, and Apple (or Port Wine) are the best varieties. Good supplies of Grapes are also arriving. Supplies of forced Strawberries are daily increasing. English Grapes consist chiefly of the variety Gros Colmar, but supplies are decreasing. English and French Asparagus is becoming more plentiful, and Cucumbers are to be had in fair quantities. Other forced vegetables consist of Beans, Peas, Seakale, Mushrooms, and Mint. Good samples of Teneriffe Tomatoes are difficult to obtain. Ordinary vegetables continue to be fairly plentiful, but trade generally has been slow during the past week. *E. H. R., Covent Garden Market, March 22, 1916.*

Potatoes.

	s.d. s.d.		s.d. s.d.
Bedford—		Lincoln—	
— King Edward ..	5 0-5 6	— Eclipse ..	4 6-4 8
— Blackland ..	4 0-4 6	— Evergood ..	4 0-4 6
— Dunbar ..	6 6-7 0	— King Edward ..	5 0-5 8
Kent—		— Queen ..	4 9-5 6
— Eclipse ..	4 6-5 0	Scotch—	
— King Edward ..	5 3-5 9	— King Edward ..	5 0-5 6
— Queen ..	4 9-5 3		

REMARKS.—Trade remains very firm; prices are about the same as those of last week. Consignments from growers are not very large, and stocks in London are small. *Edmund J. Newbourn, Covent Garden and St. Paul's, March 22, 1916.*

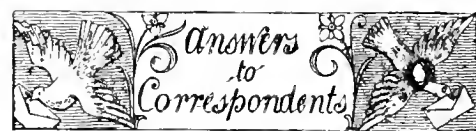
DEBATING SOCIETIES

BATH GARDENERS'.—Mr. T. Parrott (chairman) presided at the fortnightly meeting of the Bath Gardeners' Debating Society, held on Monday, the 28th ult., at the Foresters' Hall. Mr. Fulker, of the Reading Gardeners' Society, read a paper on "The Germination of the Primula." The lecturer said *Primula sinensis* was introduced into England from China about 100 years ago. Many varieties were suitable for the greenhouse, conservatory, or living-room. He advised the preparation of a mixture of soil suited to each class of seed, and the maintenance of a temperature of about 65°. Samples of soil which he had found suitable in his experience were handed round for the inspection of members. The list of awards was as follows:—Class 1: H. W. Tugwell, Esq. (gardener, T. Parrott), 14 pots of Cyclamen, six points and first-class certificate; Messrs. Rivington and Johnson (gardener, T. Ainsworth), twelve vases of cut flowers, six points; Mrs. Hatch (gardener, T. Allen), collection of Potatoes, six points. Class 2: A. E. Meyer, Esq. (gardener, C. Adlam), twelve vases of cut flowers, six points; Mrs. Erskine (gardener, H. Roper), eight pots of Cyclamen, six points. A first-class certificate was awarded for three vases of Chrysanthemums, not for competition, shown by Mr. C. Wall.

WARGRAVE AND DISTRICT GARDENERS'.—A well-attended meeting of this association was held on the 8th inst. Mr. J. F. Mascord, gardener to Mr. H. C. Bond, of Wargrave Court, contributed a paper on "Rose Culture." He treated on the situation for a Rose garden, trenching and preparing the ground, planting, pruning, mulching, watering, pests and diseases, and concluded with a list of the best varieties in cultivation.

GARDENING APPOINTMENTS.

(Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.)
Mr. F. Snell, for the past 31 years Gardener to Mrs. Vernon Carter, St. George's Lodge, Weybridge, Surrey, as Gardener to A. PHILLIMORE, Esq., Willesley Hall, Ashby-de-la-Zouch, Leicestershire.



BULBS NOT PLANTED: *Yorkshire Reader.* Your best plan is to plant the bulbs in the wild garden or some part of the pleasure grounds where they may remain undisturbed. An alternative is to place them in boxes and grow them in cool conditions in a frame for supplying cut blooms. But you must not expect blooms of the best quality if you adopt the latter method.

COLLAR OF A MELON: *Constant Reader.* According to Dr. Jackson, in *A Glossary of Botanic Terms*, "collar is the 'neck' of a plant, the imaginary boundary between the above and underground portions of the axis." The part of the stem from which the leaves arise is termed a node. To speak of Melons decaying at the collar means that the disease attacks that portion of the stem just above and in immediate contact with the soil. It may be of interest to add that the ancient botanists believed that the soul of the plant resided in the collar, and argued learnedly "about it and about."

FUMIGATING VINES: *Constant Reader.* It will be safe to use the specific you mention before the flowering stage, provided that the maker's directions are followed closely. The fumigating should be done in the evening after the sun's rays have left the house; next morning air should be admitted freely, according to the weather, and the atmosphere kept damp.

NAMES OF PLANTS: *C. W. F.* *Cypripedium Boxallii*.—*C. E. F., Dublin.* *Cypripedium villosum* (the larger) and *Cypripedium venustum*.—*J. E. H., Berks.* *Sequoia sempervirens*, the Red Wood of California. A giant specimen of this remarkable tree is illustrated in *Gard. Chron.*, Sept. 13, 1900, p. 303, with an accompanying note.

PEAR SHOOTS DISEASED: *J. E. F.* The shoots are affected with canker caused by *Nectria ditissima*, the common Apple canker. Cut off and burn the diseased shoots where this is practical; if not, pare away the affected surface and dress the wounds with gas tar. Keep down attacks of aphid and other insects that puncture the bark, as the fungus is a wound parasite.

SEEDS FOR IDENTIFICATION: *R. P. B.* The seeds are apparently those of the "Pigeon Pea" (*Vigna Catjang*), a very variable plant widely cultivated in the Tropics. The seeds are commonly used for food, and it is unlikely that they would cause the ill-effects you mention.

STOPPING CHRYSANTHEMUMS FOR BUSH PLANTS: *Yorkshire Reader.* It is not advisable to stop the plants when they are only 3 inches high; 5 to 6 inches high would be better, and they should be pinched again at the end of May or early in June. After the plants are stopped a second time it may be advisable to thin the number of shoots somewhat, according to the quality of bloom you require. If moderate-sized blooms are required nine to twelve shoots would be sufficient. Certain varieties make excellent plants if allowed to grow naturally. The temperature you suggest—60° to 65°—is much too high, 50° being quite warm enough to secure a stocky growth, and even cooler conditions are suitable. As the days get warmer the temperature naturally will be higher than that stated, but when fire heat must be employed 50° should be the maximum temperature at which the house is maintained.

Communications Received.—B. H.—J. S.—C. E. F.—H. L.—H. E.—H. W. W. Co.—A. D.—P. E. W. R.—J. C. A.—T.—W. Marsh.—H. P.—B. G.—S. E. B.—C. F. P.—R. G.—J. G.—J. B.—E. S.—W. C.—W. G.—E. B.—C. T. D.—L. B., New York.

THE

Gardeners' Chronicle

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OF CANTELOUPS.

WHY is the Canteloup Melon not more grown in this country? Personally, I would not cross the road to get one of the mawkish, sickly "hothouse Melons" that are more in fashion; whilst I would cross several streets and pay more money for a good variety of Canteloup. But tastes differ, and I know people who eat with apparent zest and satisfaction the so-called "Water Melons" of the shops in a hardly half-ripe condition. One reason, I think, is that people do not know the Canteloup; thus the Wisley Melon trials 1914 (*R.H.S. J.*, XL., 1915, p. 554) apparently only included four varieties of Canteloup amongst the 71 under trial; another reason is that they do not know how easy it is of cultivation; and, thirdly, the seeds of the better sorts do not seem to be listed by our seedsmen. Without any artificial heat by pipe or hot-bed, and with very little attention, luscious fruit may be obtained in September, and yet in the lists one usually sees such an entry as "hardy frame Melon" or "mixed Canteloups." I have bought seeds in Paris on May 4, sown them on the 6th, and had crops of the variety *Bellegarde*, the most precocious perhaps of all. In 1914, after the plants were started and flowers pollinated, the frames were left unheeded, with the exception of one, or at most two, waterings during a dry spell of weather, until the fruit was ready to gather.

Varieties.—The varieties I have tried hitherto are:—*Noir des Carmes*, which is recommended by many as the sort for first essay; the fruit is flattish, smooth of skin, well segmented, and dark-black green, the "invisible green" of the bookbinder, becoming duller and yellowish when fit for the table, though sometimes it becomes a full orange colour; the flesh is rich red orange. The flavour is excellent.

Vauriac is somewhat rough and warty on the surface, at first greenish buff in colour, becoming buff or ochrey on ripening, flesh red orange, and

of excellent flavour. The largest fruit I cut last year weighed 3 lb. 5 oz., with "cold" culture.

Bellegarde is very prettily dappled with darkish green and pale grey-green; the ribbing is not well marked, flesh orange red, sugary, and of good bouquet.

Prescott hâtif is also dappled green and grey-green, but not quite so richly contrasted as in *Bellegarde*. The cicatrix, or boss, at the end of the fruit is curiously large, and detracts somewhat from its appearance. I should class it rather below the three former in flavour. (*Prescott fond blanc* I have not tried.)

Sucrin (Canteloup *sucrin*, not to be confused with *Melon sucrin de Tours*) is of buff colour, ripening without very much change, and finely-coated with short hairs, the segments are well marked. The flesh is orange, and judging from only one year's trial the flavour is quite good.

Chair verte (green-fleshed Canteloup) is curious in having a thin tapering prolongation at the stalk attachment, and is also finely hairy on the surface. The segmentation is not very prominent. I have only grown it one year, and thought it rather poor and mawkish, more after the style of the ordinary Melon; but it is not so early in coming to maturity as the others

with the slope, which gives more internal reflection of light than if they are put on vertically. In the winter and spring these frames are filled with Lettuces, Radishes, etc. In the hot season (1911) I had quite a good harvest from plants which were planted out under cloches, as enough frames were not available.

Of course, to get early crops, it is necessary to sow in heat early. Last year (1915) no heat—except that directly from the sun—was used throughout, and we had well-ripened fruits at the end of August and through September. Seeds were sown on March 15; unfortunately a fat field mouse found them, and a second sowing of unrecorded date had to be made. *Bellegarde* was sown on May 9, but I cannot be sure if the others were done again at that date, or earlier. The seeds were sown in a dry compost with plenty of humus, and damped when the weather looked propitious, the pans being kept in a double-span, unheated house. The seeds are laid out about 1½ inch apart, and pushed down with the finger. When the seed leaves are thoroughly well-developed, the plants are potted off directly into 5 or 6-inch pots, covered right up to the seed leaves; they seem to do better thus than when potted in small pots, and re-pot-



FIG. 74.—CANTELOUP MELON "VAURIAC," GROWN IN A SMALL FRAME, 1914. THE STRINGS OF CORKS ARE USED FOR SHADING THE PLANTS.

that have been named, and my "cold" treatment will have to extend another trial for it. Here it may be noted that any insufficiently ripened fruits at the end of the season, which do not appear to promise proper table maturity, are cut up, after some storage, and cast for a short while into hot syrup, whereby they may be satisfactorily used as a sweet course.

In regard to cultivation, Canteloups appear to do best by themselves; I generally have a few spare plants, which get put in along with Aubergines and Tomatos in one house, and some in a vinery, but they never do much good. Nor, again, do the ordinary deep frames that seem to be favoured in this country appear to ensure their well-being. The accompanying photograph (fig. 74) shows the sort of frame I have been using for the last eight years; it is little more than a magnified handlight, and was designed to accommodate the smallest amount of carpentry with the largest amount of light, and also four Melons. Each span is covered with a simple sheet of 26-oz. glass, 3 ft. x 2 ft.; the sides are cut from 11-inch plank sloped down to 7½ or 8½ inches at the ends. In the later pattern than that depicted the ends are put on square

ted, and it also saves labour if space is available. The next attention they require is pinching before planting out. If pinching is not practised the vines grow great lengths; and whilst abundant male blossoms appear, there are none to be fertilised for a long time. It would appear that the female blossoms are borne upon the third set of shoots, and that by pinching the first or main vine back to two eyes (pinching above the third leaf and destroying its eye so as to make use of an extra leaf rather than pinching at two leaves only) the second set of shoots appears prematurely, and again, when these have attained seven or eight leaves another pinching will ensure the early arrival of the third set of shoots (though some pinch longer, I generally pinch above the fourth leaf and destroy its eye). This second pinching will be done after planting out, and later fruit-bearing branches may be stopped a few leaves beyond the fruit. Unnecessary crowding of shoots may be dealt with, but I do not trouble much about the latter, at any rate until forming fruit are getting too much buried.

The planting out (in 1915, May 28 to June 13) is done close to each corner of the frames—i.e.,

four plants per frame; beforehand a pit is dug and filled with about one half or two-thirds of a bucketful of old, rotted manure at each site, and a slug trap placed there for a few days. The glasses are kept closed, and the interior well damped till the plants get well away, after which—and this is the object of planting close to the corners—no water is given within, any watering being done into saucer-like hollows made outside. The earth within gets as dry as the proverbial Sahara, but I have never had any trouble with red spider in these frames—slugs are the worst enemies, and it is well to apply plenty of soot when planting.

Then there is nothing to be done till the fruit blossoms appear, unless the sun becomes too powerful, when some shade must be given. After trial of many things the "perfect" shading was devised; it consists of ordinary bottle corks strung lengthwise on strings (four dozen per string, one or two strings per plant); one of these strings is shown in the figure temporarily resting on a cloche. Except when the glass is removed for pinching or pollinating, after the early waterings are done with, these shadings

only to plant one variety in each frame in case of accident. I generally pollinate every blossom available, and place a piece of crock below to mark it. If the largest size of fruit is desired generally only one or two per plant is allowable, and thinning out of successfully fertilised fruits may be done; two of equal size may be left to look after themselves; here I note that it has been recommended to fertilise the second when the first has nearly attained full size. I am afraid that I do not worry much about size, and think that a small fruit dissected with a teaspoon is as good as a piece of one of the largest attacked with a tablespoon, so that generally we have one fairly big one and two or three medium or small. (Note: both "Chair verte" and "Sucrin" seem to throw several fair-sized fruit.)

Daily inspection is advised for some days to see that fruit has set, or to pollinate for more, after which, things being satisfactory, the frames may be left to look after themselves: here I do not think that any watering is needed, nor doses of artificials or liquid manure, though I have usually given a few wettings, followed by half a

pollinating with three blossoms when possible. Some seeds sink at once, these I keep as first grade; others will sink within an hour, and form a second grade; whilst a further lot only drop after several hours. There seems to be a strong French tradition that cucurbitous seeds should be kept for at least one year before sowing, in order to produce more fertile plants. It would be interesting to know if any recent direct trials have been made to prove the worth of the tradition, which, so far, I have usually blindly followed. *H. E. Durham.*

CEPHALOTUS FOLLICULARIS.

THE two photographs of this remarkable Australian Pitcher plant reproduced in figs. 75 and 76 are sent by Mr. H. Haddon, gardener to J. J. Neale, Esq., Lynwood, Penarth. Fig. 75 shows a fine specimen, with large and well-developed pitchers and two flower-stems, and fig. 76 a pan with four sturdy seedlings. As so few succeed in growing this remarkable plant, much less in raising it from seeds, the cultural note which Mr. Haddon sends will be read with interest.

"My *Cephalotus* are potted in small pots, the largest plant being in a three-inch pot. The compost consists of chopped Sphagnum-moss, crock dust, and a little fibrous loam. The pots containing the plants are plunged in a 6-inch pan, keeping them well above the rim, and filling the space around them with small crocks over which a layer of Sphagnum is placed, the pitchers resting on this as they develop (see fig. 76). I never allow the plants to become dry, and they are sprayed over every day until October.

"They are grown in a house with other insectivorous plants, including *Sarracenias*, *Droseras*, and *Pinguiculas*, but at the shadiest end, as they do not like full sunlight, which *Droseras* and *Sarracenias* require.

"To cause them to set seed I brush the flowers over with a small camel-hair brush. When the seeds are ripe the capsules are removed and the seeds sown in the capsules as they are, on the surface of the pans. So managed the seeds germinate freely, as you saw by the seed vessel with several tiny plants in it which I sent you recently. To show how this plant thrives here I may state that we had only three plants without leaves or pitchers eight years ago. Since then we have exchanged some for other plants, and now have 45 specimens."

THE ROSARY.

SEASONABLE NOTES.

ROSES UNDER GLASS.—It is a mistake to use much fire-heat during dull weather to force Roses, for it causes weakly growth that shows distress later when the weather turns sunny. A better plan is to keep the temperature at, say, about 55° by day and 50° by night. Careful watering is very necessary; tapping the pots to ascertain whether moisture is needed or not is safer than judging the condition by a mere inspection of the surface soil. Plants that were started before Christmas will now, of course, need much more water than those started in February. The soil should be sprinkled with a reliable fertiliser occasionally, and the material lightly forked in; for the more advanced plants in bud this feeding may be supplemented by weak liquid manure, withholding it as soon as colour is seen in the buds.

I find it very useful to transfer the more forward plants showing colour to a cool house facing north. The flowers will develop most beautifully, and the plants may be kept until they are wanted for the conservatory, where they will remain in good condition for a long time. Plants that are less forward should have their growths trained out to neat sticks, with the object, not of



FIG. 75.—*CEPHALOTUS FOLLICULARIS*, AS GROWN AT LYNWOOD, PENARTH.

need not be touched, and remain night and day in place; a certain amount of light gets through and the glass is kept cool. With the chills of September and October, it may be advisable to lay on mats at night, if fruit is still out. With regard to ventilation, a quarter or eighth of an inch at the top suffices and needs no attention. Some French writers recommend putting blocks to raise the whole frame from the ground; possibly this is better than allowing the hot air to escape (as from so-called "improved" cloches).

Pollinating is simple, and necessary to ensure an early crop, for though some natural fertilisation often occurs it may occur too late. There seem to be four sorts of flowers—large and small, both male and female. I generally use large male and large female flowers, but have no notes of any differences in the fruit where small ones had to be used; perhaps some botanist may tell us whether there is any significance in the difference in size. The corolla is carefully torn off the plucked male blossom, and the anthers are rubbed on the stigmata. If seed is to be saved, it is important to see that both of the blossoms dealt with are on the same plant; it is also advisable

gallon or less of solution of sulphate of ammonia and superphosphate each 1 lb., and sulphate of potash $\frac{1}{2}$ lb. to 20 gallons of water.

The period for cutting needs care to observe the signs of sufficient maturity, namely, the onset of discoloration, the development of the well-known scent or bouquet, and perhaps most important, the condition of the little tendril attached to the stem near the fruit stalk; this should be withered off. At the end of the season, when the nights get too cool, and the fruits "swat" with condensed moisture, it is my plan to take the whole plant with fruit attached into dry store, and when the leaves and stalk have withered bring the fruits indoors into the warm to finish ripening. In storing it is well to keep in a dry atmosphere—damp tends to the attack of moulds.

Lastly, there remains the saving of seed; that they should be washed thoroughly, and only those that sink should be preserved is well known. I find that the proportion of sinkers is extraordinarily variable in the different fruits, perhaps highest in the case of the smaller fruits, though I generally make a practice of

securing shapely specimens, but to afford every leaf as much light as possible. Sometimes it will be necessary to bend a young growth considerably in order to give the plant a symmetrical appearance. I prefer the pyramidal form for pot plants rather than the fan shape. Mildew and insect foes must be sedulously guarded against by using one of the safe and effective fumigants. Red spider is best combated by forcible syringing with clear water, especially on the under-side of the foliage, and maintaining a moist atmosphere. To combat mildew under glass nothing is better than to use a good sulphur vaporiser, but if the grower guards against soft foliage, and is careful in ventilating, mildew should not cause much trouble.

Syringe the plants freely on the mornings of bright days at about 10 a.m., but do not have an excessively moist atmosphere at nights or black spot disease will appear.

An up-to-date Rose-house should be furnished with blinds so that shading may be afforded on bright days. This is the more necessary to very advanced plants, and especially to those intended to furnish exhibition blooms on a special date. The retarding or hastening of plants for exhibition calls for the grower's utmost skill. Years ago, when very large plants were shown, growers frequently resorted to the use of small canvas tents in order to retard their plants, and the hint may be helpful now, in view of the approaching show of the National Rose Society.

Plants potted last October and placed in cold pits in January are breaking well. They are very useful for placing in a cool house, for it is not wise to force them much. I prefer growing such plants on a gentle hotbed under glass, the bottom heat being an admirable aid to root action.

The planting out of Roses under glass should be done whenever opportunity offers, selecting a few of the stronger-growing varieties from the non-climbing section of Teas and Hybrid Teas. Varieties of the type of Lady Hillingdon, Sunburst, Mme. A. Chateau and Mrs. Herbert Stevens will soon cover a wall, or, if transferred to large pots and placed on benches, will quickly cover the roof surface and provide quantities of useful blooms for buttonholes over a longer period than will the so-called vigorous climbing sorts.

Cuttings taken from plants that have just flowered will strike readily in the propagating frame. Make the cuttings with two eyes, retaining the top leaflet, and insert them around the edge of a 5-inch pot in sandy compost.

Plants of Crimson Rambler grown in 5-inch pots and cut back to four or five eyes make splendid decorative specimens for conservatories after they are established.

Blooms with long stems are in great demand. To obtain them plant out under glass in well-trenched soil. By pruning very hard each season long-stemmed flowers may be obtained. Ophelia is one of the best varieties for this purpose, and the most suitable time to plant is June, using young grafted specimens. I mention this now in order that a house may be reserved for the purpose and the soil prepared in advance. *Experience.*

AMERICAN NOTE.

SUNFLOWER AESTHETIC GEM.

AMONG the varieties of *Helianthus annuus* offered by Messrs. Sutton and Sons is one called Aesthetic Gem, which they credit to Messrs. J. Veitch and Sons. Having grown this from Sutton's seed, I find it to be a remarkable and interesting variety, which deserves to be described. It may receive the technical name var. *Veitchii*. It is 6 to 7 feet high, with a very stout stem (diameter 25 mm.), and small lateral flowering-bearing branches in the axils of the leaves; that is to say, a profusely branched plant of cylindrical outline. Leaves very large

(largest a foot across), deeply dentate. Disc dark; rays very rich orange, regularly and conspicuously in two rows. It is a very handsome plant, representing a new type of branching, not identical with that produced by crossing the monocephalous and ordinary long-branched forms. Some of the seeds received were black, others reddish and speckled, but there was no difference in the plants produced. There were, however, a few plants not true to type; one with leaves less dentate, and lighter rays in a single row; another identical with Sutton's Earliest of All, which with us has not proved any earlier than other varieties. The latter type of plant is probably heterozygous for the number of rows of rays, as some have one row, others two rows, and sometimes both one and two rows occur on a single plant. Typical Earliest of All has a few heads at the top of the stem, but lacks the system of lateral floriferous branches so characteristic of *Veitchii*. The branching of *Sunflowers* presents many curious features. Last year we obtained a form with very long oblique lateral branches, and also very long lower laterals, leaving the main stem at right angles a short distance from the ground, on which they

is much the same in the case of the evergreens. Hence both can be handled with impunity and without the risk, inevitable later on, of damaging the rising fronds and probably spoiling the symmetry of the plant for the season. Furthermore, after the long winter rest, root action is naturally more vigorous, and disturbance involves much less strain upon the plant's constitution than when the fronds are rising and demanding all the energies of the roots to keep them going without a check. At the time of writing, root action is just commencing, but the fronds take several weeks to fatten up, as it were, prior to rising, like giants refreshed, to display their beautiful forms in the coming season. Examining one of the deciduous or non-evergreen species, such as the Lady Fern (*Asplenium Filix-foemina*), we shall find a long-established plant to consist probably of five or six individual crowns closely set together, all but one of these having been produced by lateral offsets of an original single crown. Each of these, however, is practically an independent individual with its own system of roots, and we can profit by this fact to separate the mass by means of a blunt trowel inserted between the crowns, so



FIG. 76.—*CEPHALOTUS FOLLICULARIS*, SHOWING THE POTS PLUNGED IN A PAN OF CROCKS AND MOSS.

(See page 182.)

often become prostrate. These basal horizontal branches easily become detached from the stem. *T. D. A. Cockerell, Boulder, Colorado.*

THE FERNERY.

SPRING TREATMENT OF BRITISH FERNS.

SINCE even as early as February, in a mild winter, our native Ferns begin to prepare for summer by commencing root activity as a preliminary to starting vigorous growth a few weeks later, no better time than the present can be chosen for such operations as involve the shifting and repotting of plants, the formation of new rockeries and other stations for proper accommodation of collections, and also the division of established specimens with a view to propagation. At present, all or most of next season's display of frondage is snugly packed up, in the case of the large crown forming species, in the dormant crowns which form the only visible signs of existence of such Ferns as are deciduous, and die entirely down in the autumn; and it

as to force them apart. If, however, as is sometimes the case, two crowns have been formed by fission or the development of two centres of growth in the same crown, we must wait until a distinct neck is developed between them, and then start operations with a cut with a sharp knife, prior to the trowel being used. Generally, however, the crowns are easily separated; in either case, when separated, the distinct sets of roots are clear enough, and there is no difficulty in establishing each division as a specimen. These remarks apply with equal force to the other crown-forming Ferns, such as the Buckler Fern (*Lastrea*) and Shield Fern (*Polystichum*), all of which lend themselves more readily to separation propagation, developing their secondary plants rather by lateral offsets than by central fission.

When dealing with the Shield Ferns, it should be borne in mind that many varieties, especially of *P. angulare*, the soft Shield Fern, bear bulbils or young plants on the fronds, and as this often occurs on very fine varieties, it is well to search for them when removing old frondage, and

profit by the opportunity of propagation they afford. Detach the portion of frond bearing the youngsters, peg it down on good soil, and keep it close, and as a rule they will soon root and establish themselves. Such Ferns as the Polypodies, which have creeping rootstocks, can be propagated by means of separated portions consisting of a section of the creeping rootstock, with its bunch of roots and a frond or two (or obviously growing young tips, if of the deciduous types), installed in suitable open soil, will soon establish themselves as specimens. With regard to this class of Fern, fine specimens can only be obtained by letting them alone when well established, but with regard to the larger crown-forming species, they benefit greatly by being kept as far as possible to single crowns by removal, as they appear, of the lateral off-sets, as above described. The single crown, freed from the competition of its offspring for root and air room, develops on a far larger scale, and shows its varietal character to much greater advantage. With regard to the class of plants, we have in view not the common or normal forms, but the innumerable far more beautiful varieties or "sports," of which very large numbers are now stocked by the trade growers. *Chas. T. Druery, V.M.H., F.L.S.*

THE MECHANICS OF DIGGING.

I HAVE often wondered if men who are engaged in digging in market gardens, private gardens, and allotments in the spring ever realise how much energy they have to exert in performing the operation. I have asked men who have been digging for forty years and more in market gardens how much ground they can dig in a day or in a week, and if they have any idea as to the weight of soil they lift in the course of an hour or a day. Judging from the indefinite and often grotesque replies to my enquiries, it was evident that very few had ever given the slightest thought to such questions, and at the best had only very hazy notions on the subject. For myself, I must confess that although I have often done a good day's digging, it is only recently that I have taken the trouble to analyse my labours and set them down in mathematical terms. And the results, as given below, if they are not actually astonishing, may be at least interesting to those who till the soil with the spade or the fork with the object of making the earth "smile with plenty."

Being of opinion that if you want a task done properly it is generally best to do it yourself, I decided to tabulate my own labours in connection with the digging of four square poles or rods (i.e., one-fortieth part of an acre) of market garden land. The questions I had in view may be stated thus:—(i) How long would it take to dig four square rods one "spit" deep? (ii) How many times I should have to push the spade into the soil in the process—in other words, how many spits should I have to take? (iii) What would be the actual weight of the soil lifted, not reckoning what might fall off the spade? And (iv) How much energy in mechanical "foot pounds" would be needed to accomplish the task?

It may be advisable to state that my soil is not of that terribly tenacious character that frightens a man before he begins his task. It is of a genial, sandy-loamy composition of good depth, and is a pleasure to dig—when one is in the humour for physical exercise.

The implement I generally use is a No. 2 steel spade, weighing just $7\frac{1}{2}$ lb., and measuring $39\frac{1}{2}$ inches over all, the blade being $11\frac{1}{2}$ inches long and $7\frac{1}{2}$ inches wide.

In many, if not most, market gardens, a No. 5 spade is generally used by the workmen, but it is doubtful whether a man can perform so much work in a given time with such a large and heavy spade as he could with a lighter one.

A large spade may go a little deeper into the soil when it is honestly pushed down to its full depth, and not at an angle of 45 degrees, but the extra weight that must be lifted at each spit must tire the worker sooner than if he were to use a lighter and more handy spade. Furthermore, the smaller spade cuts the soil up into smaller portions, and this in itself must lead to increased fertility.

Now to answer the queries propounded above.

(1) In regard to the time taken to dig four square poles (121 square yards) of soil. This work was done at what I may call "day work" rate—that is, in such a manner that if necessary I could have worked on for eight or ten hours, with a break of an hour at half time. At the end of ninety minutes two poles had been dug, taking rests when necessary. There were still two more poles to be dug, and I was wondering if I should maintain the same rate of progress. I had the impression that I should not. However, spit after spit was turned up in the same "day work" fashion as before, and the four poles were dug one spit deep in exactly three hours.

This was equivalent to digging an acre (i.e., 160 poles) of this particular kind of soil in 120 hours. Working eight hours per day, it would be possible to dig one acre in fifteen days, or in twelve days at ten hours per day. (Many kinds of soil would, of course, take half as long again, or twice as long, to dig.)

(2) With a view to finding how many times the spade was driven into the soil during the three hours' work, a space of eight square yards was carefully measured off, and the number of "spits" was counted. They came to 120, or an average of fifteen to every square yard. Therefore it was necessary to lift 1,815 spits in the digging of the four poles. This is equivalent to digging 72,600 spits per acre (4,840 square yards).

(3) The actual weight lifted and turned over may come as a surprise to those who have never considered the matter. To ascertain this, as the work proceeded, I placed four ordinary "spits" of soil in a box, not taking into account what had dropped into the trench. These four "spits" were weighed after the digging was done, and came to 120 lb., thus giving an average of 30 lb. weight to each "spit" of soil. This means that in digging four poles of ground I turned up 1,815 spits, weighing 54,450 lb., equal to 24.3 tons in three hours (i.e., an average of 302.5 lb. per minute). Thus I had lifted over eight tons of soil per hour, and one of my young hopefuls remarked, *sotto voce*, "What a fool I must have been to do so!"

Bringing these figures to the unit of an acre, they mean that a worker would turn up 72,600 spits of soil, weighing 2,178,000 lb. (or 972 tons), in the course of 120 hours' work! At 6d. per hour, this works out at a shade under three-farthings per ton.

(4) It is now appropriate to consider the amount of energy that had to be exerted in the digging. An analysis of the process reveals five distinct acts in digging each "spit" of soil, viz.:—(a) Lifting spade, weighing 7 lb.; (b) forcing same into soil, 20 lb.; (c) levering up 50 lb. soil, 15 lb.; (d) lifting 30 lb. soil 1 foot, 30 lb.; (e) projecting and inverting same, say, 30 lb., making a total of 100 foot-lbs. per spit.

As just over ten "spits" of soil were lifted every minute on the average, this is equivalent to 1,000 foot-lbs. of energy exerted in the same time; so that during my three hours of digging four poles my muscles were strained to the extent of 100 times 1,815, or 181,500 lb., which equals 81 tons (including, of course, the 24.3 tons of soil). The energy to be expended upon digging an acre of similar soil would therefore amount to 3,240 tons.

Taking the above figures into consideration, who can say now that the labourer is not "worthy of his hire," even if it is on the grand scale usually paid to gardeners? *J. W.*



The Week's Work.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

SWEET PEAS.—Take the earliest opportunity when conditions are favourable to plant out-of-doors Sweet Peas raised in pots or boxes last autumn. Disentangle the roots entirely and bury them deeply in the ground, using a trowel for planting, and surrounding them with fine soil and leaf-mould. By pressing the thumbs and fingers into the ball of soil when this is somewhat dry, and by shaking, all the old soil may be removed without breaking a root. It will be found that the plants are slow in starting, but they make up for this loss later, and are less likely to succumb to drought than when set in groups of four or more, just as they grew in the pot. If the plants are intended to be disbudded they should not be closer than 1 foot apart, but half this space will suffice for those grown naturally. It is well to put the stakes, or whatever form of support is used, in position at the time of planting.

PLANTING PENTSTEMONS AND VIOLAS.—These plants should be sufficiently hardened to be planted out. If intended to be used for summer bedding they should be put in temporarily in lines 1 foot apart, and space in the kitchen garden may be found for this purpose. If the bed or border for the planting of Pentstemons is vacant, it should be dug deeply, and if necessary enriched with rotted manure and leaf-mould. The plants may be set at 12 to 18 inches apart. The flower-heads should be pinched off the Violas for some weeks to come unless they are required to flower now.

HARDENING ANTIRRHINUMS.—Plants of Antirrhinum which were raised during January and afterwards pricked off closely into boxes need more space. The best plan is to prepare a bed of rich soil on a hard bottom covered with leaves or manure from a spent Mushroom-bed. Before planting sprinkle the soil with superphosphate. Plant at 4 to 6 inches apart. Take the opportunity to eliminate "rogues": the colour of the leaves is an indication of the varieties. The "rogues" may be used for mixed masses of flowers or for planting in the less important quarters of the garden. Arrange a framework of bean-sticks over the beds, so that the plants may be protected with mats in severe weather.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

PEACHES.—Thin the fruits finally when they have finished stoning. Crop lightly, and do not overcrowd the trees with young growths. Disbudding having been done conjointly with thinning, superfluous shoots should be few, but where they are likely to crowd each other those intermediate between the one nearest the base and the leader should be pinched back and eventually removed. In mild weather the temperature may rise to 60° at night, but in cold weather be content with 55°. Endeavour to have the house at a temperature of 75° to 80° at closing time, with an abundance of atmospheric moisture, syringing the trees twice daily with tepid water. A little clear soot-water syringed over the trees twice a week will impart a healthy hue to both fruit and foliage, and help to ward off early attacks of red spider. Late trees are coming into bloom. Remove the worst placed and weaker flower-buds. Keep the trees dry while they are in blossom, and pollinate the flowers in the middle of the day with a rabbit's tail. Damp the borders and paths every afternoon at closing-time if the day has been fine.

PINEAPPLES.—Plants of the variety Queen selected for special treatment at the beginning of the year are making rapid progress. Remove all galls or small suckers from the crowns and base

of the fruits, and reduce the number of suckers on each plant to one or two. Examine each plant carefully for watering, and when moisture is necessary use sufficient weak manure or guano water to moisten the whole ball. It has been necessary to use a considerable amount of fire-heat, but during April 75° on mild and 70° on cold nights will suffice as minimum temperatures. Guard against the pipes being too hot when there is a prospect of a sunny day, but let the fires be started in good time in the afternoon to prevent a too rapid fall of the temperature after closing time. In bright weather—but in bright weather only—spray the plants lightly at closing time. Watch carefully that the fermenting materials of the bed do not give a warmth of more than 90°.

SUCCESSIONAL PINES.—Later plants are growing freely: the house should be closed early in the afternoon after well damping the floors and walls and lightly spraying the hot-bed. Let the temperature decline gradually to 65° at 10 p.m. on cold, and 75° on mild nights. Ventilate the houses carefully, admitting air freely in fine weather: it may be necessary to employ a light, movable shading material during the brightest part of the day. Certain varieties are more susceptible to injury at the leaf from hot sunshine than others. The watering of these and still later plants needs extreme care, for an excess of moisture would result in yellow, unhealthy foliage. Clear soot water given occasionally will improve the colour of the foliage. Continue to plant suckers and pot on any that are well rooted.

CUCUMBERS.—Pinch the shoots of vigorous plants at each joint, retaining a few extra shoots on weak or overcropped plants. The atmospheric temperature at night should be 70° to 75°, and the bottom-heat 85°, with a suitable increase by day. Cucumbers grown on hot-beds in pits or frames do not require much feeding.

THE KITCHEN GARDEN.

By E. R. JONES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

CAULIFLOWERS.—Autumn-raised Cauliflowers should be planted at the first favourable opportunity, choosing a sheltered position for the earliest varieties, which will provide a succession of heads to late Broccoli. Plant the main batch in an open situation in well-trenched ground, allowing a distance of 2 feet between the plants in the rows, and at least 2 feet 3 inches between the rows. Retain as much soil as possible on the roots, and plant with a trowel. Small-growing varieties, such as Early Forcing, may be planted much closer.

WINTER LETTUCE.—Make good any failures by planting fresh from the seed-bed. Plants raised in February in a cold frame may be transferred to a sheltered spot out-of-doors. Make fresh sowings from time to time to maintain a supply.

SPRING CABBAGES.—Examine the Cabbage-bed and make good all that have failed with fresh plants. Those growing in poor soil should be dressed with a fertiliser, stirring it in the ground with a hoe. Frequent hoeings will help to promote a rapid growth.

PLANTING PEAS AND BEANS.—Plants raised indoors should be transferred to the open when the ground is suitable for planting. Shallow trenches will afford a little protection, but it may be necessary to stick Yew or Spruce branches on each side of the rows, allowing them to meet at the top. These must be removed each morning. Strong late plants will prove more satisfactory than earlier ones of indifferent quality.

BEETROOT.—Make a small sowing of Globe Beet in a sheltered part of the garden. Sow in drills made 14 inches apart, setting a few seeds together at every 9 inches. If early Beets of long-rooted varieties are required for exhibition, make tapering holes with a crowbar 15 inches apart, 2 feet or more deep, and 3 inches in diameter at the ground level. Fill the holes with sandy soil, and sow several seeds an inch

deep near the centre of each hole. A double thickness of fish-netting will afford protection from frost and birds. Sutton's Black is a suitable variety for present sowing, but if this variety is required for winter supplies it should not be sown until the middle of May.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

FILBERTS AND COBNUITS.—The pruning of Filberts is usually deferred until the catkins have dispersed their pollen. The Filbert may be trained as standards, half standards, or open bushes, according to the position in which they are planted. Bushes or dwarf standards are the most suitable for gardens, though Filberts are best planted outside the garden proper, or in an orchard, for they thrive in poor situations. In such positions tall standards are most suitable, with dwarf forms between them. A rich soil is not desirable, for it would tend to promote soft and gross growth, whereas short, twiggy growths are the most fruitful. A convenient form of training is vase or goblet shape. Although it is late for planting, young trees may still be set, if the work can be done at once. Both the Cobnut and the Filbert thrive in poor, stony ground, therefore they are profitable to plant in places where trees requiring rich soil would not thrive. Kentish Cob, Early Prolific Filbert, and Merveille de Bolwiller are good varieties. The purple-leaved variety produces useful nuts and handsome foliage; it is sufficiently ornamental for the shrubbery border. Some of the prunings will be suitable for flower-stakes, the others should be burned. Suckers are produced in great abundance, and should be removed unless required for purposes of propagation. After the trees have been attended to remove weeds and fork the soil lightly to make the ground neat and tidy.

BLACKBERRIES. The Blackberry will grow almost anywhere, but it does best on a sunny bank. Do not plant in dense shade, as in cold seasons the bushes would not produce much fruit. Blackberries may be trained on a fence or trellis, a method of cultivation that is very suitable. A few common Blackberry bushes planted on the outskirts of an orchard, or in a sunny corner of an outside garden, will nearly always give good results, and training or other attention is not necessary. Rubus laciniatus, the Parsley-leaved Bramble, is one of the best sorts for growing on a fence or screen. Wilson Junior bears large fruits, but requires a very favourable season to develop to perfection.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

CHIRONIA IXIFERA.—Cuttings of this useful flowering plant may be rooted in a propagating-case; they will root the more readily if the cutting-pots are plunged in a hot-bed of moderate warmth. When rooted, pot them singly in 3-inch pots and grow them near to the roof-glass in a moderately warm house. This plant must not be over-potted, and watering must always be done with care. Young plants should be shifted into 5-inch pots, in which they will flower.

POT ROSES. As the plants pass out of flower remove them to a cool house and later to a sheltered position out-of-doors. Continue to water the roots with care, and feed them with a little stimulant. It is necessary to keep the foliage free from mildew and aphids. Climbing varieties may be forced gently. The pots being filled with roots plenty of stimulants will be needed. Admit an abundance of fresh air, but regulate the amount in accordance with the weather. An occasional light dusting with flowers of sulphur will serve to keep mildew in check.

BOUVARDIA.—Shift young plants of Bouvardia into 3-inch pots when large enough for trans-

ference. Pinch the shoots to obtain a bushy habit. Let growth develop slowly, placing the plants near the roof-glass in a house of medium temperature, and repot before the roots become pot-bound. To obtain large specimens some of the plants may be put in a prepared border at the end of May or beginning of June.

PELARGONIUM.—When the flowers appear on Fancy Pelargoniums give the roots plenty of stimulants. Some of the plants may need stakes, which should be as neat as possible, using green raffia tape for tying. The shoots of Winter-flowering Pelargoniums need pinching to induce growths to develop from the base of the plants. These plants should be placed on a shelf in a cool house until they are removed out-of-doors.

SWEET PEAS IN POTS.—Do not attempt to unduly hasten the flowering of Sweet Peas in pots, or the flowers will be weak and of little decorative value. The roots need an abundance of water and stimulants on frequent occasions. When the flowers are developing shade the plants from bright sunshine.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

VANDA.—The majority of these plants are growing freely, and may receive more water at the roots than hitherto. This remark applies especially to *V. tricolor* and *V. savia*, which will soon show signs of flowering. Top-dress plants that require this attention with fresh Sphagnum-moss. There will be no necessity to disturb the roots. From now onwards Vandas and plants of allied genera should be shaded from strong sunlight, and their surroundings kept moist by syringing between the pots on two or three occasions each day. In hot, dry weather an occasional light spraying overhead will prove beneficial, but it must be done sufficiently early for the foliage to dry before sunset.

"BOTANICAL" ORCHIDS.—Species for Bulbophyllum, Cirrhopetalum, *Eric. Gongora*, *Trich.* *Megacrinum*, *Microstylis* and *Stelis* may be grown in baskets or shallow pans, and suspended from the roof-rafters of the different houses. They should be attended to closely for watering and re-potting. Some need only a small quantity of rooting material, and all the weaker-growing kinds should be provided with ample drainage.

CATASETUM, CYCNOCHES AND MORMODES.—The finest garden species of *Catasetum* is *C. Bungeorum*, and others of merit are *C. Christyanum*, *C. Darwinianum*, *C. macrocarpum*, and *C. limbratum*. *Cycnoches*, that are known popularly as Swan's-neck Orchids, may be grown with *Catasetums*, the species usually cultivated being *C. chlorochilon* and *C. pentadactylon*. *Mormodes pardina* and *M. Buccinator* also need the same treatment. During the winter months plants of these three genera are at rest, but growth will soon recommence, and then the plants may be re-potted. Shake away the old soil and cut off decayed roots. Ordinary flower-pots or pans furnish suitable receptacles, and they should be filled one-third of their depth with broken potsherds for drainage. The plants may be grown either on the stage or suspended from the roof-rafters. The rooting medium should consist of *Osmunda* fibre cut into rather fine portions, and a sprinkling of *Sphagnum-moss*. Press the material firmly around the base of the pseudo-bulbs. Over-potting is harmful, therefore see that the pots are of a suitable size. Grow the plants in the warmest house, and at first only afford sufficient water to keep the compost just moist. Use a thin shading during the early stages of growth, but as the new pseudo-bulbs develop, more direct sunlight may be allowed. *Catasetums* and allied genera enjoy a generous treatment, and should be encouraged to complete their new pseudo-bulbs as early as possible. Most of these Orchids are deciduous, therefore directly the leaves have fallen, reduce the amount of water at the roots, and when they are at rest withhold moisture entirely. At the resting period the temperature should be 50° to 55°.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Special Notice to Correspondents. — The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, APRIL 4—
Scot. Hort. Assn. meet. Roy. Inst. (Lecture by Prof. F. Keeble, on "Modern Horticulture.")
WEDNESDAY, APRIL 5—
B. G. A. Executive meet.
THURSDAY, APRIL 6—
Linnean Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last Fifty years at Greenwich, 45.9°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, March 30 (10 a.m.): Bar. 29.7; temp. 49.0°. Weather—Cloudy.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY, AND FRIDAY—
Hardy Bulbs, Herbaceous Plants, Roses and Palms, at 12, by Protheroe and Morris, at 67 and 68, Cheapside, E.C.
MONDAY AND WEDNESDAY—
Rose Trees, Shrubs and Perennials, at Stevens' Rooms, 38, King Street, Covent Garden, W.C., at 12.30.
THURSDAY—
Roses, at 1, by Protheroe and Morris, at 67 and 68, Cheapside, E.C.
Hollies, Rhododendrons, and other stock, at Paul's Nurseries, High Beech, Epping Forest, at 12, by Protheroe and Morris.
FRIDAY—
Orchids, at 1, by Protheroe and Morris, at 67 and 68, Cheapside, E.C.
Plants in pots, Horse, Vans, and effects, at 12, at Mid-Kent Nurseries, West Wickham, by Protheroe and Morris.

The Late M. Viviani Morel.

The January-February number of *Les Amis des Roses* (which continues its good work, notwithstanding the war) contains some interesting particulars of the late M. Viviani Morel, whose death we announced several weeks ago.

The son of a gendarme of the little village of Conliège, in the Jura, Viviani Morel was born in the year 1843, and came to Lyons early in life, remaining there, or in the neighbourhood, till the time of his death, save for a short time when he was working as a gardener in Paris.

At the age of 17 he was apprenticed to M. Liabaud, and after his return from Paris four years later, Morel worked in public gardens at Lyons till the year 1873, when his opportunity came. This was the establishment of an experimental garden at Villeurbanne by M. Alexis Jordan, a botanist, who entertained the idea of confuting the Darwinian doctrine of natural selection under the influence of environment, and of proving that vegetable species were originally created with the characteristics which distinguish them at the present day. Struck with the aptitude of Viviani Morel, then 30 years of age, he offered him the post of director of these experiments, and the offer was accepted. Here Morel remained for nearly 30 years, during which time he made full use of the opportunities afforded him of extending his theoretical and practical knowledge of botany and horticulture. His attainments in these directions became more widely known when he became general secretary of the Horticultural

Association of Lyons, and editor of the *Lyons Horticole*.

The number of *Les Amis des Roses* that announces his death contains, appropriately enough, an interesting paper from his pen, entitled "Researches in the Causes of the Production of Varieties of Roses." The quaint and curious seems always to have interested him, and in his historical review of the subject he gives in detail many of the sovereign receipts for effecting this object, which are quoted with so much confidence by old writers, such as the budding of the Rose on to the Almond, Broom, and other plants, or watering the soil with various curiously composed pigments or liquids. In pursuing his subject, he makes a distinction between true hybrids, which, like the cross between the horse and ass, producing the mule, are crosses between two systematic species, and are generally sterile, and cross breeds, which are the product of two "races" (or perhaps we should say varieties) of the same species. These abound in both the animal and vegetable kingdoms, and are fertile.

In his search for some general rules to help the hybridiser, he gives us the views of Van Mons, the pomologist and rosarian, who lived at the beginning of the nineteenth century. This writer thought he had noticed that, among sowings of Roses made from year to year, the last sown flowered first, and gave the largest number of double flowers. He laid down six rules, from which it appears he hoped to attain improvement by a process of successive sowings, made year after year from father to son, though it might be at the expense of hardihood. Morel, not without justice, regards the exponent of this system as an example of "patience incarnate," but he agrees with him so far as to seek for progress in new varieties of Roses by constantly breeding from the most beautiful flowers. In his own sowing Morel found that, contrary to the views of Van Mons, he seldom sowed from single or semi-double flowers, though he adds that very beautiful Roses have often been obtained from semi-double seed-parents. While it is clear that Morel was sensible of the advantage of the modern practice of artificial cross fertilisation, it may perhaps be inferred that in his own practice he relied on the sowing of vast quantities of seeds, and the prompt destruction of inferior varieties. He thought that in size and fulness of petals the Rose may be near the limit of useful development, but that the search for novelties among Roses has somewhat left behind the stumbling empiricism of the past, and now marches with a more assured step on the road to progress. "Let us hope," he concludes, "that hybridisers will add new marvels to the already rich garland of the Rose." Viviani Morel died, as he had always lived, in harness. His loss will be felt by many to whom he was scarcely known in person, and in his own district, for which he had done so much, it will be particularly deplored. Besides being an horticulturist, he was a veteran of 1870, an ardent patriot, and was

eagerly looking forward to the time, which we trust may be near at hand, when his country should emerge in triumph from the ordeal through which she is passing.

Research in Market Gardening.*

One of the most interesting horticultural developments of recent years is the establishment, at Turner's Hill, Cheshunt, of a research station for the investigation of problems arising in connection with the market growing industry. The research station owes its origin to the initiative of the Lea Valley and District Nurserymen's and Growers' Association, and possesses laboratories and ranges of glass-houses for experimental purposes. Funds for these purposes have been subscribed by the growers themselves, by the Herts and Essex County Councils, and by the Duke of Bedford, and to these funds were added a grant of £1,300 to the capital account, and a maintenance grant of some £600, granted by the Board of Agriculture from the fund provided by the Development Commissioners. The first report is of necessity brief, for the laboratories were not completed until last year: nevertheless, it contains records of experiments which are extremely interesting. Tests of the manurial value of bacterised peat—made with Tomatos and Cucumbers—failed to demonstrate that this substance has any virtues that are not to be found in farmyard manure, or that growers may expect to obtain by its use larger crops than they get by more ordinary means. Practical men will be interested to see the table of yields given by fifteen varieties of Tomatos grown in each of five houses. Fillbasket leads easily with an average of 10lb. 14oz. per plant. Ailsa Craig comes second, with an average of 10lb. 2oz. Kondine Red gets fourth place with 9lb. 6oz. per plant; 7th in the list is Sunrise, with 8lb. 7oz., Comet and Tresco come 10th (7lb. 14oz.), and the yellow-fruited type last with 3lb. 14oz.

The differences are remarkably great, and doubtless further work will be done in the testing of these varieties.

The records of yield of Cucumbers taken from the warmer and cooler ends of four houses are curious and interesting. In all cases the slightly warmer half (nearer the boiler), the minimum temperature of which was 1° higher (by day and night) than in the cooler half of the house, shows a considerably lower yield. It would be interesting to have the opinion of growers on the significance of this fact.

All interested in the progress of horticulture will extend a friendly interest to the work of this most recent of research stations, and will wish it a long career of usefulness.

Few who have themselves achieved success are unaware of the fact that, with fuller knowledge, their success would have been greater, and we, for our part, think that in thus founding a station for experiment the market growers have shown a wisdom which is as rare as it is commendable.

* First Annual Report (1915) of the Experimental and Research Station, Nursery and Market Garden Industries Development Society, Limited.

SMALLER ORCHID GROUPS AT THE CHELSEA SHOW.—At the meeting of the Orchid Committee on Tuesday last, the Chairman (Mr. J. GURNEY FOWLER) asked the opinion of the members as to the extent of the Orchid exhibits it was desirable to stage at the Chelsea Show this year. The difficulties of labour and carriage, and other considerations consequent on the war, he thought rendered some modification of the arrangements of former years necessary. Sir JEREMIAH COLMAN, Bart., said that while sufficient should be done to make a good show, some reduction in the size of groups would be an advantage. Other members expressed their concurrence, and it was decided that the size of groups should be limited to a frontage of 20 feet and an area of 120 square feet. Mr. FOWLER also referred to the note in the *Gardeners' Chronicle* of March 18, relating to a proposed sale of Orchids on behalf of the Red Cross funds, and said that he had received some communications on the subject.

DAMAGE BY STORM AT KEW.—During the exceptional storm of Tuesday last a large Cedar was blown down at Kew Gardens and completely destroyed the Temple of the Sun. Besides other damage, the last of the ancient Elms known as the Seven Sisters was uprooted by the wind.

APPOINTMENT.—Mr. R. O. WILLIAMS, a member of the gardening staff of the Royal Botanic Gardens, Kew, has been appointed by the Secretary of State for the Colonies, on the recommendation of Kew, Curator of the Royal Botanic Gardens, Trinidad.

ECONOMY IN THE EDINBURGH PARKS. At a recent meeting of the Edinburgh Town Council, a report from the Parks' Committee relating to the remit in connection with the report by the City Chamberlain on the question of economy was submitted and approved. The report was to the effect that expenditure for furnishings and wages should be reduced; that the Waverley Gardens (above the Waverley Market) be only opened in summer on condition that the expenditure is estimated at £62, or thereby; that all the public bowling greens be opened as usual, but that the charges be increased; that charges be made for football pitches; and that the charges for golf be increased.

THE U.S.A. CARNATION SOCIETY.—The Perpetual-flowering Carnation Society on Wednesday last, the occasion of the Spring Show, cabled congratulations to the American Carnation Society, which is celebrating its 25th anniversary with a show and conference at Philadelphia, the city in which the American Society was founded.

DANES FOR FARM WORK.—The President of the Board of Agriculture and Fisheries is informed that the Central Labour Exchange Department of the Board of Trade are prepared to try and obtain Danish labour for work on farms in England and Wales which are outside the prohibited areas, provided the Department are assured that engagements for not less than twelve months can be guaranteed and that the third-class travelling expenses of the men from Denmark will be advanced by the farmers on the understanding that such advances may be recouped by deductions from the wages. The men would consist mainly of young single men between the ages of 18 and 25, who have had practical agricultural experience, especially in dairy farming, and who have taken a short course at a farm school. They would require to be lodged and boarded under reasonably comfortable conditions, and would have to be paid the current rate of wages for skilled farm workers. Farmers who desire to obtain Danish labour under these conditions should apply before the end of March to the Secretary, Board of Agriculture and Fisheries, 4, Whitehall Place, S.W., stating the number of men they would engage and the wages offered, and giving an undertaking that they will advance the travel-

ling expenses of the men, which, in all probability, would not exceed £3.

THE BELGIAN GRAPE TRADE.—Last February the Belgian Grape growers had to sell their produce to the Germans at 4½d. to 9d. a pound, according to quality, and quite recently the Germans were offering Belgian hothouse Grapes in Holland at 4d. a pound.

SALE AT MESSRS. W. BULL AND SONS.—From Messrs. PROTHORPE AND MORRIS, who con-

briskly bidden for: the numbers of the *Botanical Magazine* from 1864 to 1902 realised six guineas.

WAR ITEMS.—Second-Lieutenant JAMES H. G. BORLAND, of the Highland Light Infantry, son of Provost BORLAND, seedsman, Irvine, and associated with his father in the business, has been wounded in France, and is in hospital.

PATROGENESIS.—Under this title a very interesting case of inheritance is described by G. N. COLLINS and J. H. KEMPTON in the current



FIG. 77.—*SOPHRO CATTLEYA REX*, OR BISHOPST VARIETY.

(Awarded a First-class Certificate on Tuesday last. See p. 190.)

ducted the sale at this nursery on the 21st ult. and following days, we learn that the sale proved wholly satisfactory. The Palms sold especially well, a single specimen of *Kentia Forsteriana* fetching the high price of £14, and a fine *Chamaecrops humilis* five and a half guineas. The *Amaryllids* for which the firm was noted also sold well; many were put up in lots of six named varieties, and they averaged over £2 10s. each lot. One especially meritorious lot was sold for eleven guineas. Books, chiefly unbound, were

number of the *Journal of Heredity* (March, 1916). A cross was made between *Tripsacum dactyloides* and *Euchlaena mexicana*, or "veo-sante," both members of the *Maydeae*, though rather widely separated. The differences are well marked: *Tripsacum* being a perennial with staminate and pistillate flowers in the same inflorescence, and with but one to three erect branches in the terminal inflorescence, while *Euchlaena* is an annual with staminate and pistillate flowers in different inflorescences, and

with 8-20 drooping branches in the terminal inflorescence. *Tripsacum* was used as the female parent, and four seeds were obtained, of which one germinated. To make certain that it was not a stray, it was dug up, and found to be growing from "an unmistakable *Tripsacum* seed." It developed subsequently into a normal *Euchlaena* plant, and showed no trace of its *Tripsacum* mother. It produced seeds by self-pollination, as well as when pollinated with *Euchlaena* and Maize, and in no case did its progeny show any *Tripsacum* characters. It had not been found possible to repeat the original cross when the account was written, owing to the difficulty of bringing *Tripsacum* and *Euchlaena* into flower at the same time. When pollinated by Maize, however, *Tripsacum* set viable seed, which all developed into apparently pure *Tripsacum* plants. The Maize pollen appears to be capable of inducing parthenogenesis in *Tripsacum*, a state of things comparable with what is known to occur in certain Orchid crosses. The *Tripsacum* × *Euchlaena* hybrid cannot, however, be accounted for in this way, since it was purely paternal in all of its many characters, and without any trace of its seed parent. The most plausible explanation would appear to be that the nucleus of the *Tripsacum* ovum degenerated, and that the so-called hybrid arose from the nucleus brought in by the pollen cell. It recalls a case of similar nature recorded by MILLARDET in Strawberries many years ago, where the offspring were stated to be purely paternal. The phenomenon is evidently rare, and the result of further experiments by the authors will be looked forward to with interest.

POISONING FROM DAFFODIL BULBS.—At the last meeting of the Edinburgh branch of the Pharmaceutical Society of Great Britain, a communication was made by Mr. W. G. McNAB on a case of poisoning from Daffodil bulbs. Poisonous symptoms had followed partaking of soup and afterwards of stew containing what were supposed to be sliced Onions, but which proved to be bulbs of *Narcissus pseudo-Narcissus*. The bulbs had been stored in the same house as the Onions, and had been taken by mistake. Similar cases of poisoning have been recorded and traced to the alkaloid pseudo-narcissine.

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

BRUSSELS SPROUTS.—I am certainly at one with your correspondent *Practical* as to the value of Brussels Sprouts. For a continuous supply, however, I strongly advocate two or three sowings at least during March and April; many also recommend autumn sowing, but I do not favour this practice. I must differ from *Practical* in the varieties recommended. The one held in high esteem throughout the country by all who have grown it is Dwarf Gem. A small to medium-sized sprout, wonderfully firm, and, what I have always found of the utmost importance, the stock is thoroughly fixed. *E. Beckett, V.M.H.*

PERPETUAL-FLOWERING CARNATIONS.—Mr. Harriss, in his instructions upon growing Perpetual-flowering Carnations, in your issue of March 11, advocates methods contrary to those practised by the leading commercial growers. He advises, when potting the plants into 5in. pots, to use "a compost of fibrous loam, naturally decayed leaf-soil, a little soot, and coarse sand," and goes on to advise the plants being kept close for a few days, and sprayed with rain water twice daily during bright weather. Commercial Carnation growers throughout the world advocate for semi-final and final potting or benching, as the case may be, horse manure for heavy soil, and cow manure for light soil; mortar rubble for medium soil, lime for heavy soil, and pulverised chalk for light sandy soil. Wood ashes or ashes from garden or nursery refuse are most valuable additions, while only sufficient sand should be

added to give the compost a free drainage, as the actual parts are governed by the richness and texture of the loam. All Dianthi abhor leaf-mould. As for spraying plants twice upon bright days in March, this would only make the already soft growth softer and invite disease. These instructions are more suited for midsummer. The only value in spraying Carnations is to keep them free from insect pests, and at all times a high pressure and exceedingly fine spray is important for this purpose. Light and air are two essential factors at the present season to build up a short-jointed, robust plant. *Market Grower.*

—*Market Grower's* assertion that Carnations abhor leaf-soil will be a surprise to many gardeners. I have grown Carnations successfully for twenty-five years, and never do I remember preparing soil, either for inserting the cuttings or for potting up the plants at any stage, without including leaf-soil. I have purchased plants from time to time from Carnation growers of repute, and this has given me ample opportunities to compare my own plants with those of the specialists, and I am bound to say my plants have always compared most favourably with those I have purchased. I have been shy

THE PAPER COMMISSION.

IMPORTANT RESTRICTIONS.

OWING to the decision of the Government to impose restrictions upon the importation into this country of paper and paper-making materials there will be a shortage in the supply of paper, calling for the most rigid economy.

Publishers have been forced to use far more paper than is needful by the practice of distributing copies of their papers "on sale or return." The waste in this manner must be reduced to the minimum, and we ask, therefore, all readers of the "Gardeners' Chronicle" who desire to have copies supplied to them each week (and are not already receiving them direct from the office) to give their local newsagent a definite order to this effect.

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of including manures of any kind with the soil for potting up plants in their early stages of growth, and I believe that more failures result from this practice than from any other cause; a richer compost for the final potting is necessary in almost all cases for Carnations. We use well-seasoned horse manure, and, in addition to a little sand, brick rubble and wood ashes. In regard to spraying, *Market Grower* says the only value attached to this is that it keeps the plants free from insect pests. Surely this is sufficient justification for the practice. *E. Harriss.*

HARDINESS OF PRIMULA MALACOIDES (see pp. 119, 135).—I am sending you a few flowers and leaves of *Primula malacoides* as a proof of its hardiness. They are taken from plants growing on an exposed but well-drained position in the rock-garden here, the only protection afforded them being sheets of glass mounted on wires to keep off excessive moisture. They have withstood 17° of frost, also the recent severe weather, when for a month the maximum temperature has not exceeded 40°; in fact, they have been in flower all the winter. I think this leaves no doubt as to their hardiness, but, in common with many of the best Alpines,

excessive dampness is their greatest enemy, and probably they would be difficult to winter outside in wet and heavy soils. *F. C. Puddle, Scampton Hall Gardens, Rillington, Yorks.*

LIME-WASHING EXPERIMENTS.—The result of the trials by *Southern Grower*, p. 174, on the use of various lime experiments, bears out my experience that pure lime of the Buxton type is the most effective and lasting spray. Put on in April just before the blooms open, it will adhere to the trees until the autumn, even if the weather is slightly showery at the time of spraying. This spraying effectively cleanses the trees of moss and lichen, but does not prevent an attack of aphid, especially the purple form. Trees that are annually or biennially sprayed with lime are not generally affected with other insect pests. The lime, too, does much good to soils that are deficient in lime. Many hesitate to use lime when the flower buds are ready to open, but they need not be afraid. Some trees I sprayed when in full bloom carried the lime in the eye of the apples until they were gathered. Never did I see a heavier crop of Damsons—the Merryweather—than last season on some trees sprayed with pure lime when in full blossom. The ordinary lime made from soft stone or chalk will not adhere sufficiently. *E. M.*

NOSEGAY PELARGONIUMS.—I am quite in accordance with your correspondent, *R. P. Brotherton*, page 176, in thinking that very few of the present generation of young gardeners have ever seen a Nosegay Pelargonium. Still, the members of this section were exceedingly popular in my young days, and in some catalogues which I have before me—1866 to 1870—a great number of varieties are offered. Nearly all the varieties were employed for summer bedding, most of them, particularly the two mentioned by your correspondent—Stella and Rival Nosegay—being remarkable for their extreme floriferousness. Other classes of Pelargoniums that attained the height of their popularity about the years named were the Tricolor, Golden Bronze, and variegated leaved. A notable feature of these, particularly the Tricolors, was the high prices charged for many of the newer forms. For instance, in the catalogue of E. G. Henderson and Sons, Wellington Road, St. John's Wood (the site of which now forms the practice portion of Lord's Cricket Ground), the following prices are to be found for new varieties:—Edwina Fitzpatrick, 2 guineas; Lucy Grieve, 3 guineas; Sophia Dumaresque, 2 guineas; Spanish Beauty, 2 guineas; Sophia Cusack, 2 guineas; Countess of Tyrconnel, 2 guineas; and others ranging in price from 15 shillings to a guinea and a half. These Tricolors were in their day largely grown as specimen plants, as also were the Golden Bronze, the new varieties of which realised from half-a-guinea to one guinea. These last held their own as bedding plants better than the Tricolors, which were of too delicate a constitution, and too expensive to be generally employed for the purpose. The most popular variety was Mrs. Pollock, and it may still occasionally be met with, while some of the Golden Bronzes are grown to a limited extent. The double-flowered Ivy-leaved varieties were in those days unknown, while the double Zonals were too coarse for bedding. *W. T.*

THE ANCIENT USE OF LIMESTONE (see p. 179).—I can mention another cap of mountain limestone in the same county as that described by Mr. Harold Evans. In the south-western corner of Brecknock, on the right bank of the upper reaches of the River Tawe, is an elevated plateau, known locally as the Cribbarth Mountain, but given in one of my maps as Capel Cellwen. I visited this in 1885, hunting for *Asplenium viride*, and found it fairly plentiful in the crevices of an outcrop of mountain limestone. This is one of the few most southerly habitats for this Alpine species, and eleven other species of British Ferns occur within a short radius of it. The strata of limestone were perpendicular and very much shattered. Water or weather-worn blocks of the same formation lay on the surface not far off, together with blocks of white quartz and old red sandstone. The outcrop of mountain or magnesium limestone had

been quarried for many years, and appeared to have been one of the industries of the village of Ystradgynlais, a little way down the valley. The trolleys, when loaded with it, were lowered to the valley on rails by means of a windlass and cable, and when gravitation could take them no farther, the limestone was put in boats on the Tawe, here canalised. As far as I could see, the limestone was much broken in the process of quarrying, owing to its shattered condition in the natural state, and further broken by means of hammers. The industry had fallen into decay by the date above mentioned, and whether it has been revived since I cannot say. Possibly the burning and grinding of chalk in other districts may have proved too keen in competition for this old industry. J. F.

EFFECTS OF THE STORM AT ALDENHAM.—The scene of devastation here after the blizzard of Tuesday last is something unique in our experience. Probably the most serious damage we have sustained at Aldenham has been to the fine old avenue of stately Elms which lies directly in front of the house. It has taken generations to produce these magnificent specimens, yet a few hours of raging wind has left them maimed and disfigured. Some of the strongest boughs have been broken like match wood; in other cases the trunks have been snapped off about 12 feet from the ground, and others again have been torn up by the root. A most picturesque tree on the estate, a grand old Horse Chestnut, conspicuous for its beauty and symmetry of form, has been battered almost beyond recognition. Of the damage done to the smaller trees and shrubs, what with severed stems and smashed stakes, it is almost incalculable. Established trees of *Cedrus atlantica*, 20 feet to 30 feet in height, are blown over, trees of the same height as *Cupressus erecta viridis*, as well as hundreds of other valuable trees which were thought to be wind-proof, are now lying on the ground—many absolutely ruined. This only concerns ourselves, but I hear of hundreds upon hundreds of trees in the immediate vicinity which are uprooted and battered to pieces. The storm has worked havoc upon the fruit trees, and some of our Damsons and Apples have had the principal boughs torn from them, only leaving great white open cavities to indicate where they once grew. The damage, unfortunately, is not confined to tree life, but has manifested itself in many other ways. Glass lights were swept off frames, pits and houses, and tossed in the air like shuttlecocks. Much protecting material which was covering fruit walls was torn to shreds, and is now useless. E. Beckett, F.M.H., Aldenham House Gardens, Elstree, Herts.

EARLY SAXIFRAGES IN KIRKCUDBRIGHTSHIRE.—It may interest readers who value the early Saxifrages in different localities to mention that the following sorts were in bloom or just over in the garden of Mr. W. D. Robinson-Douglas, at Orchardton, Castle-Douglas, on March 17. The garden is very favourably situated, close to an arm of the Solway, and is one of the favoured spots in Kirkcudbrightshire. The Saxifrages were:—*apiculata*, *apiculata alba*, *Boydii*, *Boydii alba*, *Borisi*, *Burseriana*, *Burseriana Gloria*, *Elizabethae*, *Faldonside*, *Irvingii*, *Paulinae*, *Petraschii*, *perophylla*, *Rocheliana*, *Stribruyi*, *thessalien*, *lilacina*, and *retusa*. This is a very satisfactory record, considering the long spell of cold weather which had prevailed for many weeks. There has, however, been hardly any snow here. St. Cuthbert's.

GARDENERS AND EXPERIMENTS.—Mr. Wm. Taylor (see p. 178) puts the case for the private gardener with his customary lucidity and fairness. The gardener dares not risk failures, so he wisely treads the familiar path, unless, as only too rarely happens, he is accompanied by his employer, when he may safely seek the goal by the less frequented ways. But when the average gardener, of whom Mr. Taylor speaks, does experiment, I do not agree that he is more prone to form wrong conclusions than anyone else. The gardener with an inquiring mind (and it is only such that will trouble to experiment) is careful to weigh the pros and cons before coming to a decision. It is true that a practice which is justified in one case may not be successful

in another. But this is equally applicable to the cultural experiments of scientists. After all, what can any cultural experiments prove, but that a certain treatment was found to be successful? No two soils are precisely alike, and if the best is to be got from the ground it must be studied and humoured. J. C. Bortholt.

"PRINCIPLES OF PLANT TERATOLOGY."—I am much interested in your reviewer's estimate of my work, but cannot agree with all his criticisms. Regarding the matter as he does from a totally different standpoint, it must be difficult to understand the one assumed by me. In the first place, I had no intention of expounding my "principles" along the out-and-out scientific lines so dear to the mind of the modern orthodox botanist; that field I conceive to be too narrow and limited for such a purpose. I write expressly (p. 8): "The title of this work indicates, in fact, a desire to give both a scientific and a philosophic treatment to the subject." With the aid of the broader philosophic view it is easy to see the necessity for postulating what I have termed "a regulative vital force," over and above the chemical and physical forces, in order to adequately explain the phenomena dealt with. I quite agree with the reviewer that "we," i.e., the out-and-out scientists, "know nothing at all about any 'regulative vital

SOCIETIES.

ROYAL HORTICULTURAL.

MARCH 28.—It is satisfactory to note that the fortnightly meetings continue to attract numerous exhibits and good attendances. On Tuesday last the Hall was fairly well filled with groups of Orchids, Roses, Carnations, Daffodils, Hyacinths, hardy flowers (including Alpines), Ferns and other subjects.

The Orchid Committee recommended two First-class Certificates and three Awards of Merit to novelties, and four Medals to collections.

The Floral Committee recommended three Awards of Merit to new plants, and twenty Medals for groups.

Two varieties of Daffodils were recommended by the Narcissus Committee for award, and this committee also awarded two Medals for groups.

The Fruit and Vegetable Committee made no award of any kind.

Floral Committee.

Present: Messrs. H. B. May (chairman), C. E. Shea, J. Dickson, W. Bain, J. Heal, C. R. Fielder, J. W. Moorman, G. Harrow, J. W. Barr, John Green, W. Howe, W. H. Page, J. F. McLeod, T. Stevenson, J. Jennings, R. C. Nevill,



FIG. 78.—*SAXIFRAGA SUNDERMANNII*; FLOWERS WHITE.
(R.H.S. Award of Merit, March 28, 1916.)

force." I state expressly on p. 10: "The whole problem (of the existence of a vital force) is outside the true domain of physical science, and cannot be solved by its method." If the reviewer were able to appreciate the broader philosophic attitude, he would see that I used the terms "fortuitous" and "haphazard," as opposed to "purposive" and "regulative"; and he would also see (for it is quite obvious to me) that the action of chemical and physical energies must be fortuitous and haphazard unless they are guided and controlled (as Sir Oliver Lodge, for one, holds that they must be, in a living organism), by life. Hence it will be seen how impossible it would be for me to follow the orthodox scientific lines of treatment, which the reviewer is so eager to lay down as the standard we should all follow: that method, to my mind, is incapable of explaining the facts. If I am to be regarded as the "apostle of Celakovsky" (!), I should like to see his name spelt correctly, i.e., with a "y" instead of an "i"! The sporangium cannot be regarded as belonging to a distinct category, for the good reason that it is capable under certain conditions of becoming transformed into leaf-tissue. The reviewer states that I have the courage of my convictions. I regret the inability to say as much for him. For he is too shy apparently to disclose even a letter of his name. W. C. Worsdell.

A. Turner, C. Dixon, W. Cowley, R. Hooper Pearson, W. P. Thomson, E. H. Jenkins, G. Paul, W. A. Bilney, E. A. Bowles, W. B. Crautfield, R. C. Notcutt, and James Hudson.

AWARDS OF MERIT.

Primula Crispit.—A seedling of *Primula Juliae*. The flowers have stalks about $1\frac{1}{2}$ inch long, and the whole plant is very dwarf. The leaves are not reniform, as in *J. Juliae*, nor so smooth as in that species, but more like small foliage of *P. vulgaris*. The petals are rosy-purple, and there is a well defined yellow eye. Shown by Messrs. WATERER, SONS AND CRISP, LTD.

Saxifraga Sundermannii (see fig. 78).—A hybrid of the *Kabschia* section, with white flowers of the *Burseriana* type. The glaucous-grey foliage grows in dense cushions; the inflorescences are about 2 inches high, and bear milk-white flowers, each about an inch across, in twos and threes. Shown by Miss WILLMOTT, V.M.H.

Carnation Grisel.—A variety of the Perpetual-flowering section, having a large, well-formed flower of reddish-violet colour (Violet rougeâtre, *Repertoire de Couleurs*, plate 180, tone 4). Exhibited by Misses PRICE and FYFE.

OTHER NOVELTIES.

Mr. M. PRICHARD, Christchurch, showed a variety of *Orobis vernus*, the wings heavily

stained with rose colour on a white ground. A specimen shown in a small pan bore large numbers of the pretty rose-tinted blossoms. (A charming little Alpine named *Androsace Lageri alba* was exhibited by Messrs. JACKMAN AND SON, Woking, Surrey. There were eight plants in a small pan, and each had a number of milk-white flowers in corymbs, arising from tufts of stiff Juniper-like leaves.)

Messrs. R. TUCKER AND SONS, Oxford, showed *Meconopsis Pratii* raised from seed sent home from China by Mr. Farrer. The whole plant is spiny, including the leaves and inflorescence, which rises from a stately cluster of leaves. The flowers are a beautiful shade of blue, set off by a ring of white anthers.

GROUPS.

The following medals were awarded for collections:—

Silver-Gilt Banksian Medal to Messrs. E. AND G. CUTHBERT, Southgate, for Hyacinths. The spikes of the several varieties were of the largest size, and their fine effect was enhanced by the use of *Pteris* Ferns as a groundwork, and a row of Japanese Maples at the back.

Silver Flora Medals to Messrs. ALLWOOD BROS., Wivelsheld, Haywards Heath, for a large exhibit of Perpetual-flowering Carnations. There was a representative collection of popular and up-to-date varieties, including *Mary Allwood*, *Wivelsheld White*, *Salmon Enchantress*, *Philadelphia* (deep cerise); *Dragon*, a new Perpetual Malmison variety of chestnut-red colour; and *White May Day*, a new market variety; Mr. GEORGE PRINCE, Oxford, for Roses, a selection of the best varieties being *Hoosier Beauty*, a sweet-scented crimson variety of fine shape; *Lady Pirrie*, a popular "town" Rose of flesh pink colour, and exquisite shape; *Climbing Richmond*, *Sarah Bernhardt*, a semi-double bloom of rich crimson colour. *Silver Banksian Medals* to Messrs. W. CUTHBERT AND SON, Highgate, for Carnations, Alpines, and forced shrubs, including delightful little plants of *Pink Pearl Rhododendron*; Messrs. STUART LOW, AND CO., Enfield, for a large exhibit of Carnations of the Perpetual-flowering type, such as *Baroness M. de Bienen*, *Gorgeous*, *Philadelphia*, and *Champion*; also greenhouse flowering plants, such as *Crowea angustifolia*, *Acacias*, *Eriostemon linearifolium*, *Ericas*, and *Bononias*; Messrs. H. B. MAY AND SONS, Edmonton, for well-flowered Clematises, grouped with *Cinerarias*, tiny plants of *Azalea Hexe*, and exotic Ferns; Misses PRICE and FYFE, East Grinstead, for Perpetual-flowering Carnations, including their novelties, *Kenneth*, mauve suffused with rose; *Madelon*, cherry red, and a promising scarlet seedling; Mr. M. PRICHARD, Christchurch, for hardy plants in pots, *Saxifraga oppositifolia* *Wetterhorn*, and *Primula viscosa* being shown well; Mr. L. R. RUSSELL, Richmond, Surrey, for flowering shrubs, including splendid plants of *Azaleas*, each a mass of flowers; and Messrs. SUTTON AND SONS, Reading, for an artistic group of *Lachenalia Nelsonii*, and bowls of the scarlet *Anemone fulgens*.

Bronze Flora Medals to Messrs. J. CHEAL AND SONS, Crawley, for shrubs and Alpines, blue Primroses being a feature of the spring flowers; Mr. ELISHA HICKS, Fwyford, for Roses, principally the fragrant Mrs. George Norwood variety of pale pink colour and the deep crimson single *Princess Mary*; Messrs. J. WATERER, SONS AND CRISP, LTD., Twyford, for a rockery planted with Alpines and hardy spring flowers; *Bronze Banksian Medals* to Messrs. BLACKMORE AND LANGDON, Bath, for a fine strain of Polyanthus and blue Primroses; Messrs. H. CANNELL AND SONS, Eynsford, for Zonal Pelargoniums, set off by a row of Star *Cinerarias* at the back. Miss DIXON, Edenbridge, for Polyanthus and Auriculas; Messrs. JACKMAN AND SON, Woking, for Alpines; Mr. W. MILLER, Wisbech; Mr. G. BEUTHE, Keston, Kent; and Messrs. WHITELEG AND PAGE, Chislehurst, all for hardy plants.

Orchid Committee.

Present: Mr. J. Gurney Fowler (in the chair), Sir Jeremiah Colman, Bart., Sir Harry J. Veitch, Jas. O'Brien (hon. sec.), Gurney Wilson, B. A. Rolfe, R. G. Thwaites, F. J. Hanbury, Pantia Rallie, A. McBean, W. Cobb, J. Charlesworth, S. W. Flory, C. J. Lucas, R. Brooman White,

John Rutherford, T. Armstrong, E. R. Ashton, and Stuart Low.

AWARDS.

FIRST-CLASS CERTIFICATE.

Sophro-Cattleya Rex, *Orchidhurst variety* (*S.-C. Doris* × *C. Empress Frederick*), (see fig. 77) from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. A superb hybrid, in which the desirable object of preserving the influence of *Sophronitis grandiflora* in new combinations of colour, and of the large-flowered *Cattleya* size, is accomplished, the flower being nearly as large as typical *C. labiata*, and of much finer shape. *Sophronitis grandiflora*, *Cattleya Dowiana* (twice) and *C. Mossiae* enters into its composition with happy results. The sepals and petals have an underlying ground of old gold colour, tinged with salmon-rose, and the well-rounded lip is carmine crimson with gold veining from the base. Column white.

Odontioda Gladys (*Odm. Pescatorei* × *Oda. Bradshawiae*), from G. W. BIRD, Esq., Manor House, West Wickham (gr. Mr. Redden). A charming *Odontioda* with flowers equal in size and shape to *Odontoglossum crispum*. The inner parts of the sepals and petals are white, with clear blotching of red-brown, the broad margins being rosy-lilac. The finely-grown plant bore a spike of eleven fully-expanded flowers and eight buds.

AWARDS OF MERIT.

Lycaste Skinneri Mrs. G. Hamilton-Smith, from CYRIL MAXX, Esq., Ravenswood, Bexley, Kent. The specimen shown was probably the largest-flowered form yet seen, with eight flowers, which also secured for the grower a cultural commendation. The flowers were 8 inches across, the sepals being 2½ inches wide, tinged with pale rose. The petals were darker in tint and the lips white, with dark ruby-red blotches.

Odontioda Alcantara (*Oda. Cooksoniae* × *Odm. cecimium*), from Messrs. CHARLESWORTH AND CO., Haywards Heath. A very pretty and distinct hybrid with flowers of good shape of a bright mauve tint, with irregular blotching of reddish-purple in the inner parts of the segments.

Laelio-Cattleya Verdun (*L.-C. C. G. Roebling var. Violetta* × *C. Schröderae*), from Messrs. FLORY AND BLACK, Slough. A very large and finely-formed flower with a broadly expanded lip. The sepals and petals are silver white with a delicate lavender veining, the disc of the lip yellow, and the front purplish-rose, lighter towards the margin.

CULTURAL COMMENDATION.

To Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, for a fine specimen of their new *Odontioda*, *The Czar*, with a magnificent spike carrying seven branches of seventy-five blooms. The flowers are white, with violet margins and ark Indian-red markings.

PRELIMINARY COMMENDATION (SEEDLINGS).

Odontioda Cercus (*Oda. Charlesworthii* × *Odm. excellens*).—A very interesting hybrid, with large flowers of a bright mahogany-red, and of stout texture. *Odontoglossum triumphans* through *O. excellens* sets the form and other features of the flower.

Odontoglossum crispum Perfection.—A seedling with a large flower of perfect shape, very handsomely blotched.

Odontoglossum promerens Orchidhurst variety (blotched *crispum* × *cecimium*).—Flower large, ground colour white tinged with rose and heavily blotched. The above three from Messrs. ARMSTRONG AND BROWN.

OTHER EXHIBITS.

J. GURNEY FOWLER, Esq., Brackenhurst, Pembury, sent two excellent forms of *Brasso-Cattleya Cliftonii*, showing the great range in variation in this hybrid. Fowler's variety is large and pure white, and the variety *magnifica*, light rose with deep magenta front and yellow disc to the lip.

Dr. MIGUEL LACROZE, Roehampton Lane, sent *Odontioda Red Riding Hood* (*Oda. Bradshawiae* × *Odm. Rossii*) and *Odontoglossum Glorita*, a pretty *Rossii* cross.

E. R. ASHTON, Esq., Broadlands, Camden Park, Tunbridge Wells, sent *Laelio-Cattleya*

luminosa aurea, a good flower with chrome-yellow sepals and petals and purple lip.

H. F. GOODSON, Esq., Fairlawn, Putney (gr. Mr. G. E. Day), sent *Odontoglossum crispum* *Lucilla*, a very large and finely-blotched flower.

MESSRS. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver-Gilt Flora Medal for an extensive group, principally of their fine hybrid *Odontiodas*, of which sixty specimens were staged, including forms of *Oda. Zenobia*, *Joan*, *Brewii*, *Red Cross*, *Madeline*, and most of the other kinds, of which *Oda. Charlesworthii* is one of the most effective. It was an interesting study to trace the features of each hybrid, the colours varying in a surprising degree. Good *Odontoglossums*, *Miltoia Blenana*, and the new *Laelio-Cattleya Pagasa* (*Violetta* (*C. G. Roebling*) × *Trianae*) were also noted.

Messrs. J. AND A. McBEAN, Cooksbridge, were awarded a Silver Flora Medal for a good group in which were forms of *Cymbidium Alexanderi*, *Schlegeli* and *Gottianum*; *Cattleya Schröderae*, *Miltoia Hyeana*, *Odontoglossums* and *Odontiodas*.

Messrs. SANDER AND SONS, St. Albans, were awarded a Silver Banksian Medal for a very interesting group of rare species, including *Coelogyne Lawrenceana*, *C. ochracea*, a very fine *Vanda cristata*, *Cymbidium insigne* (Sanderi) and the new and richly-coloured variety *Sanguinichium*, with the lip closely lined and spotted with dark claret. *Ornithidium coccineum*, some pretty *Maxillarias* and the singular *Uropedium Lindenii* were also included.

Messrs. HASSALL AND CO., Southgate, obtained a Silver Banksian Medal for a group of *Cymbidium insigne*, *C. eburneum* and *Lycaste Skinneri*.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, staged a small group of new hybrids, for the best of which see "Awards." The hybrid *Odontoglossums* and *Odontiodas* flowering for the first time, each with one very large and finely-marked flower, were remarkable.

Messrs. FLORY AND BLACK, Slough, showed a pretty specimen of the white *Disa sagittalis*, with ten spikes, *Odontoglossum Clotilde* and *Laelio-Cattleya Frederick Boyle*.

Mr. C. F. WATERS, Balcombe, showed good, typical *Odontoglossum crispum*.

Messrs. STUART LOW AND CO., Jarvisbrook, showed a pretty *Sophro-Laelio-Cattleya Marathon*, *Brasso-Cattleya Queen Alexandra*, *Odontiodas*, *Odontoglossums* and a dark *Laelio-Cattleya Dominiana*.

Narcissus Committee.

Present: Messrs. E. A. Bowles (chairman), W. F. M. Copeland, P. R. Barr, F. Barchard, E. Willmott, G. H. Engleheart, G. W. Leak, W. B. Cranfield, W. W. Fowler, Joseph Jacob, F. H. Chapman, W. Poupard, and Chas. H. Curtis.

AWARDS OF MERIT.

Narcissus Centurion.—A bicolor with beautiful lemon-coloured trumpet. The award was made for suitability for pot cultivation. The specimen exhibited in an 8-inch pot had 15 fine blooms. Exhibited by Messrs. R. H. BATH, LTD.

N. Cymra.—A medium-sized self Trumpet variety, of the Henry Irving type; the trumpet is a little deeper shade of yellow than the perianth. The award was made "for garden," owing to its earliness in flowering. Shown by Messrs. BARR AND SONS.

GROUPS.

Two medals were awarded for collections. A *Silver-Gilt Flora Medal* was awarded to Messrs. BARR AND SONS, King Street, Covent Garden, for Daffodils. The collection was rich in novelties, of which were especially noted *Cromwell*, a large trumpet variety; *Jaques*, a beautiful bicolor variety, with lemon-coloured trumpet; *Bassanio*, another flower with large lemon-coloured trumpet.

Messrs. R. H. BATH, LTD., Wisbech, were awarded a Silver Flora Medal for forced bulbs in bowls of fibre.

Messrs. J. CARTER AND CO., Raynes Park, showed a large number of fine blooms of *Narcissus King Alfred*.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (vice-chairman), W. Bates, E. Beckett, A. R. Allan, A. Bullock, P. C. M. Veitch, E. A. Bunyard, G. Reynolds, Owen Thomas, H. S. Rivers, and W. Poupert.

The Hon. VICARY GIBBS, Aldenham House, Elstree (gr. Mr. Edwin Beckett), exhibited a variety of the Brown Globe type of Onion, named Autumn Triumph. The bulbs were the produce of seed sown in August, 1914, and were lifted in July, 1915; although they had been in store for more than a year, they were plump and solid, showing no signs of bolting or growth. The shape is flattish, after the James' Long Keeping type, and the skin brownish. The flavour is said to be excellent. This exhibitor also showed small hearting heads of Cabbages, April, Harbinger and Ellam's Early Dwarf.

Mr. GEO. TAYLOR, Byram Hall Gardens, Ferry Bridge, showed a variety of Onion of the Ailsa Craig type, named The Urn. It is peg-top shape, the top being flat, and the root end pointed. The bulbs are large and heavy.

Messrs. J. CHEAL AND SONS, Crawley, exhibited their new late culinary Apples, Encore and Crawley Beauty, fruits of both varieties being in excellent condition.

PERPETUAL-FLOWERING CARNATION.

MARCH 29.—The exceptional circumstances of the times do not make for success in flower shows, and the Perpetual-flowering Carnation Society was doubly unfortunate in having its spring exhibition on Wednesday last further spoiled by the record blizzard. Many who had entered were unable to get their flowers to the R.H.S. Hall, Westminster, on account of railway delays, and wintry weather had its influence on the attendance.

Taking the show generally, competition was very poor, indeed in many classes only a single exhibit was forthcoming. The 1st prize in the most important class, that for 12 vases of Carnations—25 blooms in each receptacle—was the "George Monro, Junr." Challenge Cup, valued at 50 guineas. Two competed, THE CLURY NURSERY CO., Langley, Buckinghamshire, and Messrs. W. WELLS AND CO., LTD., Mersham, Surrey, the 1st and 2nd prizes being awarded in the order of their names. The 1st prize collection was especially good, and comprised excellent blooms of such varieties as Beacon, Sunstar, Gorgeous, Baroness de Brien, White Enchantress, Triumph, Lady Northcliffe and Mrs. C. W. Ward. Messrs. Wells showed the sterling variety, Pink Sensation, of rose pink colour, superbly.

Messrs. W. WELLS AND CO. were the only exhibitors in the class for 3 vases of American-raised novelties, and were awarded the 1st prize, which consisted of the Challenge Cup offered by the American Carnation Society. Pink Sensation was much the finest variety, the others being Good Cheer, deep rose, and Aviator, scarlet.

There was also only one exhibit in the class for 7 varieties shown in vases, 25 blooms in each vase. It was shown by Mr. J. C. JENNER, Rayleigh, Essex, and included such varieties as C. F. Raphael, Enchantress Supreme, Satin Robe, Mary Allwood and White Wonder.

The better of two exhibits in the class for 5 varieties in 5 vases was shown by Mr. H. T. MASON, Hampton Hill, Middlesex, Beacon and Warrior figuring prominently; 2nd, Mr. JENNER.

Mr. W. H. PAGE, Tangley Nurseries, was placed 1st in the class for three vases, and Messrs. W. WELLS AND CO. in the class for one vase.

There was better competition in the class for 6 varieties in 3 vases, in which Major Sir RANDOLF BAKER, Bart., Blandford (gr. Mr. A. E. Usher), excelled easily with fine blooms of Benora, Baroness de Brien, Marmion, Carola, White Enchantress and Mikado; 2nd, Major the Hon. A. P. HENDERSON, Windsor (gr. Mr. J. Lawrence).

Major Sir RANDOLF BAKER also won most of the 1st prizes in the classes following, including (a) 3 vases of 3 varieties, 6 blooms in each vase; (b) 1 vase of

12 blooms; (c) 1 vase of 9 blooms; (d) 1 vase of 9 blooms in 3 varieties; (e) 1 vase of 6 blooms with Benora; (f) 1 vase of 12 blooms in Messrs. W. Wells and Co.'s class, with Pink Sensation and Philadelphia; (g) 1 vase in Messrs. Stuart Low and Co.'s class with Regal Mauve, Gorgeous, Mrs. Crook and Baroness de Brien; (h) 12 plants in bloom.

The Countess of DERBY, Sunningdale (gr. Mr. W. J. Reed), showed the better of two exhibits of 3 varieties in 1 vase, and also won the 1st prize for 5 blooms of seedlings raised in this country.

DECORATIVE CLASSES.

Mr. W. HOLDER, Ridgemoor Gardens, Englefield Green, was placed 1st for a decorated vase or épergne of Carnations, showing Enchantress rather overdone with Asparagus foliage and grasses.

Mrs. A. R. BIDE, Farnham, excelled in the class for a decorated basket of Carnations, showing a bizarre variety, relieved with Fern fronds, Codiaen leaves and Asparagus, in a narrow-handled basket.

Of the four tables decorated with Carnations we much preferred the one arranged by Mrs. ROBINSON, Carshalton, to which the 1st prize was awarded. She employed dark brown, fancy baskets, tastefully arranging in them the pink variety Lady Northcliffe, with spray of bronzy-leaved Ivy, Willow shoots with catkins and Bramble leaves.

NON-COMPETITIVE EXHIBITS.

The following medals were awarded for collections of Carnations:—*Gold Medal* to Messrs. ALLWOOD BROS., Wivelsfield; *Large Silver-Gilt Medal* to Messrs. STUART LOW AND CO., Enfield; *Large Silver Medal* to Messrs. W. CUTBUSH AND SON, Highgate; and *Misses PRICE and FYFE*, East Grinstead.

Obituary.

RICHARD H. FREMLIN.—We regret to report the death, at a ripe old age, of Mr. Richard H. Fremelin, a noted Kent amateur gardener, which took place on Friday, the 24th ult., after a month's illness. His gardens at Watlingtonbury were noted for marvellously correct arrangement and contained many worthy novelties in flowering shrubs, hardy herbaceous plants, Roses and bulbs. Rock and Alpine plants were a special feature. The gardens were open to the public every Wednesday afternoon in the summer. Mr. Fremelin in his early days was a prominent entomologist, and his knowledge of injurious insects was of value to all fruit-growers and gardeners. He was a liberal supporter of the gardening charities, and his quiet, unostentatious manner endeared him to numerous friends.

JOHN RICHARDSON.—We regret to learn of the death, on the 24th ult., of Mr. John Richardson, a well-known man in the horticultural seed trade. He served his apprenticeship with Messrs. Thomas Methven and Sons, of Edinburgh, and entered the service of Messrs. Wm. Drummond and Sons, Ltd., Dublin, and Stirling, in 1883, so that he had almost completed 33 years' service with this latter firm at the time of his death. He was in his fifty-fifth year. He occupied the position of secretary to Messrs. Drummond for many years, and was well known to many horticulturists in Ireland. He leaves a widow and one son.

ENQUIRY.

"WEIGELA EVA RATHKE."—Can any reader give me particulars of the date of introduction, place of origin, etc., of this Weigela? Who was Eva Rathke? *L. B., New York, U.S.A.*

* * * NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of ½d. every two ounces.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending March 29.

Snow six inches deep.—This was a very cold week, and more particularly during the daytime than at night. On the coldest day the temperature in the thermometer screen did not rise above 36°, and on the coldest night the exposed thermometer registered 13° of frost. The ground is at the present time 3° colder at 1 foot deep and 1° colder at 2 feet deep than is reasonable. Rain fell on two days, rain and snow on one day, and snow alone on one day. The total measurement of rain and melted snow during the week amounted to 1½ inches. On the 27th inst. the total measurement of rain and melted snow amounted to over an inch—making this the wettest day in March recorded here during the 30 years over which my records at Berkhamsted extend. On the evening of Tuesday, the 28th inst., the ground was covered with snow to the average depth of 6 inches, which is the deepest fall of snow that has yet been recorded here in March. During the week 6 gallons of rain and melted snow came through the bare soil percolation gauge and 4½ gallons through that on which short grass is growing. *E. M.*

MARKETS.

COVENT GARDEN, MARCH 29.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Azalea, white, per doz. bun.	4 0	5 0	Orchids—		
Camellia, white, per doz.	2 0	2 6	— Odontoglossum crispum	4 0	5 0
Carnations, per doz. blooms.			— Pelargonium, per doz. bunches.		
— best American varieties	1 9	2 6	— double scarlet	4 0	6 0
— smaller, per doz. bunches	—	—	— Primroses, per doz. bun.	1 0	1 6
— Carola (crimson), ex. large	3 0	3 6	— Richardias (Arums), per doz.	2 6	3 0
— Malmesbury, per dozen blooms	—	—	Roses: per dozen blooms—		
— pink	10 0	15 0	— Duchess of Wellington	—	—
Daffodils, per doz. bunches	—	—	— Lady Hillingdon	1 6	2 6
— Double Van	—	—	— Liberty	4 0	6 0
— Zion	2 0	2 6	— Madame A.	—	—
— Emperor	3 0	4 0	— Chatenay	4 6	6 0
— Empress	3 0	3 6	— Melody	5 0	6 0
— Golden Spur	2 0	2 6	— Mrs. Russell	—	—
— Princess	1 6	2 0	— My Maryland	—	—
— Sir Watkin	2 0	2 6	— Niphetos	2 6	3 0
— Victoria	3 6	4 0	— Ophelia	6 0	8 0
Eucharis per doz.	2 0	2 6	— Prince de Bulgarie	—	—
Freesia, white, per doz. bun.	1 0	1 6	— Richmond	4 6	7 0
Gardenias, per box of 15 and 18 blooms	3 0	4 0	— Sunburst	4 0	6 0
Iris, Spanish, per doz. blooms	—	—	— White Crawford	2 6	4 0
— white	2 3	2 6	Spiraea, white, per doz. bun.	8 0	9 0
— blue	2 3	2 6	Stock, double white, per doz. bunches	—	—
— mauve	2 3	2 6	Tuberose, per packet, 24 blooms	—	—
Lapageria, per doz. blooms	—	—	Tulips, Darwin, mauve, per doz. blooms	1 6	1 9
Lilac, white, per doz. sprays	3 0	4 0	— red or pink varieties, per doz. blooms	1 3	1 9
Lilium longiflorum, per doz. long	2 6	3 0	— single, white, per doz. bunches	10 0	12 0
— short	2 0	2 6	— coloured, per doz. bun.	10 0	12 0
— lancifolium album, long	—	—	— red, per doz. bun.	12 0	15 0
— short	2 0	2 6	— pink, per doz. bun.	12 0	15 0
— lancifolium rubrum, per doz. long	1 6	2 0	Violets per doz. bunches	1 6	2 0
— short	1 6	—	— double, Marie Louise, per doz. bun.	4 0	6 0
Lily-of-the-Valley, per dozen bunches	24 0	—	— Princess of Wales	3 0	4 0
— extra special	15 0	18 0	White Heather, per doz. bun.	1 0	—
— ordinary	—	—			
Narcissus ornatus, per doz. bunches	2 0	2 6			
Orchids, per doz.	—	—			
— Cattleya	12 0	15 0			
— Cypripedium	2 0	3 6			
— Pseudobulbium	1 6	2 0			

French and Guernsey Flowers.

	s.d.	s.d.		s.d.	s.d.
Anemone double red, per doz. bun.	3 0	—	Stock, white, per pad.	—	—
— fulgens-scarlet, per doz. bun.	2 6	3 0	Sweet Peas, white, and coloured, per doz. bun.	3 0	4 0
Marguerites, yellow, per doz. bunches	1 6	2 0	Violets, Parma, large bun.	2 0	2 6
Narcissus Grand Primo, per doz. bun.	1 6	2 0	— single, per rad. 48-60's	9 0	10 0
— ornatus	1 6	2 0	— per doz.	2 6	3 0
Star, per pad	5 0	7 0	REMARKS.—Trade in Lilium longiflorum and Richardias (Arum) is very poor. Prices for Tulips remain very firm. The Darwin varieties are the most in demand, but their prices are a little easier. The blooms are arriving in first-class condition. Roses are getting more plentiful. The principal varieties are Mme. Abel Chatenay, Prince de Bulgarie, Melody,		

Mme. E. Herriot and The Bride. Good blooms of these varieties are obtainable, and their prices are lowering. Spanish Irises are arriving in excellent condition. The Carnation trade is improving. English single Violets are in good demand, but the blooms are much damaged by the wet weather, and only a very few arrive in a good condition. The consignments of Dutch white and mauve Lilac is very irregular, but although delayed the spikes arrive in good condition, and are soon purchased. Parma Violets, double red Anemone, Allium (Star of Bethlehem) and a few pads of large Hyacinths are the best of the French flowers arriving. Only small quantities are coming to hand.

Fruit: Average Wholesale Prices.

s.d. s.d.	s.d. s.d.
Apples—	Grapes: English.
— V. Herriot, per barrel .. 44 0-46 0	— black, per lb. 3 0-5 0
— English cooking, per bus. 8 0-10 0	— Almeria, per bbl. 42 lbs net 28 0-30 0
— Nova Scotian, per barrel .. 20 0-32 0	— Cape, per 10 lb. box .. 10 0-20 0
— Oregon, per box .. 14 6-16 0	Lemons, per case 15 0-21 0
Bananas, bunch—	Lyches, per box 1 4-1 6
— Medium .. 7 6-10 0	Melons, Cape .. 2 0 —
— X-medium .. 9 0-12 0	Nectarines, Cape, per box .. — —
— Double X .. 10 6-14 0	Nuts, Brazils, new, per cwt 58 0-60 0
— Giant .. 12 0-16 0	— Coconuts, per 100 .. 22 0 —
— Red, per ton £20 0 —	Oranges, per case 12 6-42 0
— Jamaica, per ton .. £12 0 —	— Californian Seedless, per case .. 23 0-24 0
Chestnuts—	— Palmero Bitters, per case 15 0-16 6
— Italian, per bag .. 22 0 —	Peaches, Cape .. 24 0-26 0
Cranberries, per case .. 10 0-11 0	Pears, per case .. 5 0-7 0
Dates, per doz. boxes .. 4 6-4 9	— Cape .. 5 0-8 0
Grape Fruit, per case .. 21 0-22 0	Plums, Cape .. 5 0-8 0
	Strawberries, forced, per lb. 6 0-10 0
	Walnuts, Naples, per cwt. 75 0 —

Vegetables: Average Wholesale Prices.

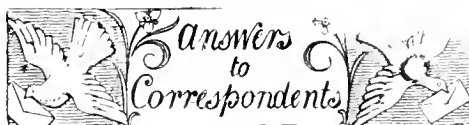
s.d. s.d.	s.d. s.d.
Artichokes, Globe, per doz. 2 6-4 0	Mushrooms, per lb. 2 0 —
— Jerusalem, per bag. 5 0 —	— Buttons .. 2 0 —
Asparagus, Paris green .. 2 4-3 0	Mustard and Cress, per doz. punnets .. 1 0 —
— English .. 1 6-3 0	Onions, English, per cwt. 21 0-25 0
— French .. 2 0-5 0	— spring, per doz. bun. 4 6 —
Beetroot, per bag 4 0 —	— Valencia, per case .. 28 0-26 0
Beans, Broad, per pad (France) 7 6 —	Parsnips, per bag 3 6 —
Broccoli, Sprouting, per bus. 2 0 —	Peas, per pad (France) .. 8 0-7 6
Cabbage, Spring, per box of three doz. 5 0 —	Potatoes—
Carrots, per cwt. 12 0 —	— Algerian, per lb. 0 3-0 4
Cauliflowers, per tally .. 8 0-14 0	— Channel Islands, per lb. 0 3-0 4
Celeriac, per doz. 3 0-4 0	Radishes, per doz. bun. 0 10-1 3
Celery, per fan .. 1 0-1 6	Rhubarb, forced, per doz. 0 9-1 3
Chicory, per lb. 0 4-0 6	— natural, per doz. 2 0 —
Cucumbers, per doz. 5 0-7 6	Savoy, per tally 6 0-8 0
English Beans, per lb. 1 6-2 0	Seakale, per doz. punnets .. 18 0 —
French Beans, Dwf. (France) per packet .. 50 10-1 0	Scotch Kale, per bus. 1 6 —
— Beans (Guernsey), per lb. 1 6-2 0	Shallots, per lb. 0 9 —
Garlic, per lb. 0 10-1 0	Spinach, per bus. 6 0-8 0
Greens, per bag. 2 0 —	Tomatoes—
Herbs, per doz. bun. 2 0-6 0	— Teneriffe, per bundle .. 10 0-16 0
Horseradish, per bundle .. 3 0-4 0	Turnips, per cwt. 4 0 —
Leeks, per doz. 1 6-2 6	Turnip Tops, per bus. 1 6-3 0
Lettuce, Cabbage and Cos, per doz. 1 0-6 0	Watercress, per doz. 0 6-0 8

REMARKS.—Among English Apples, there are several varieties still available, notably Bramley's Seedling, Dumelow's Seedling, and Newton Wonder. About 28,000 barrels of Nova Scotian Apples are to hand; Australian boxed fruits are due next week. Supplies of Cape fruits are limited; they comprise the following kinds: Plums, Pears and Grapes. English Grapes are getting scarce. The ruling prices for forced Strawberries are 6s. to 10s. a pound, morning gathered. Mushrooms are scarce, and supplies of Seakale are limited, but Cucumbers are more plentiful. Onions—English, Dutch, Valencia and Egyptian—are available; the latter are packed in bags of about 1 cwt. English and French Asparagus is obtainable in fairly large quantities, considering the time of year. There are some good French salads on offer, and ordinary vegetables continue to be fairly plentiful. Supplies of Teneriffe Tomatoes are limited. E. H. R., Covent Garden Market, March 29, 1916.

Potatoes.

s.d. s.d.	s.d. s.d.
Bedford—	Lincoln—
— King Edward .. 5 3-5 3	— Eclipse .. 5 0-5 6
— Blackland .. 5 0-5 3	— Evergood .. 5 0-5 3
— Dunbar .. 7 3-7 6	— King Edward .. 5 6-6 0
Kent—	— Queen .. 5 0-5 9
— Eclipse .. 5 0-5 6	Scotch—
— King Edward .. 5 6-6 0	— King Edward .. 5 6-6 0
— Queen .. 5 3-5 9	

REMARKS.—Trade is still very firm, and arrivals light; prices have consequently advanced again.—Edward J. Verboom, Covent Garden and St. Pancras, March 29, 1916.

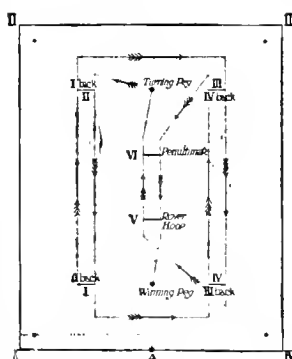


BOOK: E. W. A work of the nature you desire is *The Cultivation of Medicinal Plants and the Collection of Wild Herbs in Britain*, by E. M. Holmes, price 1s. 5d., post free, from our publishing department.

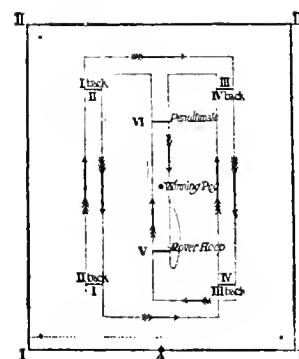
CROQUET LAWN: A. M. Surrey. According to *Laws of Croquet*, published for the Croquet Association by Horace Cox, Windsor House, Brean's Buildings, London, "the ground shall be rectangular, 35 yards in length by 28 yards in width, with a defined boundary. A flag shall be placed at each corner, and corner spots, 3 feet from both boundaries, shall be accurately defined. Points on the boundary

Setting No. 2: The winning peg equi-distant from the corner. Hoops in centre line of ground 7 yards from peg; corner hoops 7 yards from the nearest boundaries." In laying out a croquet ground it is essential to have sufficient room outside the lawn (35 yards by 28 yards) to allow of the roller or mower being turned. This is necessary to avoid unduly wearing the most important part of the turf, viz., that where the "yard line" is situated.

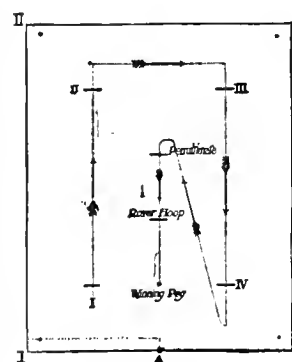
CYMBIDIUM GRANDIFLORUM (HOOKERIANUM): E. K. M. That this species frequently fails to develop its flowers is well known. The flower spikes grow for a time as usual, and the buds may become well advanced in the early winter; but from that time, and during the long, dull season, they fail to make progress, and ultimately decay, as in the flower sent by you. The explanation seems to be that through lack of sunlight the flowers remain checked, pending the arrival of favourable con-



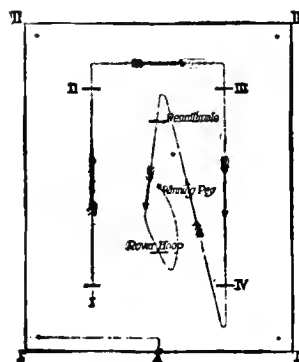
SETTING No. 1.



SETTING No. 2.



SETTING No. 3.



SETTING No. 4.

(From *Laws of Croquet*, 1908.)

FIG. 79.—THE CROQUET ASSOCIATION'S DIAGRAMS.

3 feet from each corner flag shall be marked by white pegs, not exceeding three-quarters of an inch in diameter and 3 inches above the ground. The baulk (see diagrams) shall also be defined. The hoops shall stand 12 inches out of the ground, outside measurement, and be firmly fixed. The crown shall be straight, and at right angles to the uprights, which shall be not less than 3½ inches or more than 4 inches apart (inside measurement) from the ground upwards. The turning and the winning pegs shall be of wood, of a uniform diameter above the ground of 1½ inches. They shall stand 18 inches out of the ground, and be firmly fixed. The setting of the hoops and pegs shall be in accordance with one of the diagrams shown, and the order in which the points are to be made shall be in accordance with the arrows which appear thereon. Measurements:—Setting No. 1: Pegs in centre line of ground 7 yards from nearest boundary; hoops in centre line of ground 7 yards from peg, and 7 yards apart; corner hoops 7 yards from nearest

ditions. Meantime the vegetative system becomes impatient for new growth, and the energies of the plant are diverted in that direction. One remedy is to grow the plant in a very warm, moist house until the flowers develop, and afterwards place it in a very cool house when growth is once more active. In its home in the Eastern Himalaya, at an altitude of 5,000 to 7,000 feet, there are extremes of temperature not usually experienced under cultivation.

NAMES OF PLANTS: B. C. 1, *Tsuga canadensis* (Hemlock Spruce); 2, *Picea alba*; 3, *Juniperus virginiana* var. *Schottii*; 4, *Thuya plicata*.—St. Hilary. *Ornithogalum arabicum*. Large-flowered Star of Bethlehem, illustrated in the *Botanical Magazine*, t. 728.

Communications Received.—D. F., Washington—H. J. E.—Regular Reader—J. F. F.—A. E. W.—J. H.—R. L. C.—C. T. D.—E. E. T., Illinois—Dr. Henry—H. v'O.—A. R. H.—A. S.—F. J. Toms—B.—A. MacV.—Dr. Durham—O. T.—Pie. W. W.—B. E. F., France—C. D., Aalmeer—J. R. J.—J. G.

THE

Gardeners' Chronicle

No. 1528.—SATURDAY, APRIL 8, 1916.

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NOTES FROM A COTSWOLD GARDEN.—V.

NOW that the snow is gone it is possible to estimate the damage it has caused, and this, as usual, seems to be less than one expects. The trees which have suffered most are Conifers of fastigate habit, Junipers, Irish Yews, and Cypressess, some of which have so many branches broken by the wet, clinging snow that their symmetry will be spoilt for years to come, and others have been bent over so much that staking is necessary. I have an avenue of Irish Yews over sixty years old, but, thanks to their sheltered position, and to the fact that their branches are kept together by wire, they have not suffered much. The best type of Irish Yew, which I found in the Duke of Atholl's nursery at Dunkeld ten years ago, has the branches so stiff and close to the main trunk that it requires no such wiring.* Fastigate trees are freaks of nature which, though not admired by everyone, are worth more attention than most people have given them. Among the least known and the most striking are the fastigate form of the Black Poplar described on page 1817 and figured on plate 385 of *The Trees of Great Britain*, and the fastigate Beech at Dawyck described and figured in the same volume. Two young trees of the latter, which were grafted for me by Mr. George Paul on stocks five feet high, have grown well, and preserve the Cypress-like habit of the original tree, like which, so far as I know, no other has been found. As avenue trees I can hardly imagine anything better than the best form of Cornish Elm, or the fastigate Oak, which, like many other good old things, are too little known to modern nurserymen. The latter comes

true from seed, and on good soil is a vigorous grower. Some that I raised about ten years ago are nine feet high, and have the habit of a Lombardy Poplar, and this without any pruning, beyond taking off the lower branches. Though it comes from the South-West of France, it seems as hardy here as any other Oak. The finest specimen I know of is at Melbury Park, in Dorsetshire, figured in my book.

When Parkinson began his *Paradisi in Sole* in 1629 with the Crown Imperial he said of it:—"The Crown Imperial for his stately beautifulness deserveth the first place in this our garden of delight, to be here entreated of before all other Lillies." He was not far wrong. But for some reason this magnificent plant has not received of late years the esteem which it deserves, and though it increases very fast, is perfectly hardy, and is in size and beauty the king of spring flowers, we see many good gardens where it is neglected. I have always been fond of the genus *Fritillaria*, and have grown all the species that I could get since 1874, when I collected and brought back from the Levant six species alive, of which four turned out to be new. Very little is known about the Crown Imperial in its native country, and the only recent traveller who mentions seeing it in the mountains near Shiraz, near where Kotschy found it, describes it as having much fewer flowers than we see in gardens, and this is confirmed by wild specimens in the Kew Herbarium. The plant is found in other parts of Western Persia at 47,000 feet, and, notwithstanding the great summer heat of this region, it is able to endure the severest winter frosts here; and even 10-12 degrees of frost, when it is in flower, only cause the thick, succulent stems to bend over for a time, to straighten again when the frost has gone. Dr. Aitcheson found it on the Peiwar Kotul in Afghanistan, and Dr. Thomson in Kashmir up to 9,000 feet, and there are specimens collected by Ellis in the Chenab Valley. This Kashmir form is much inferior in colour and beauty to the Persian one, and is free from the strong foxy smell which is so marked in the common Crown Imperial; on this account it has been called by E. Regel in *Gartenflora*, 1884, p. 167, var. *inodora*. It flowers in my garden a fortnight earlier than the Persian form. As many as twelve varieties of this plant were described by Miller, most of which are still in cultivation in Holland, but I do not think more than four are really worth growing. The largest of these is a red-flowered form named *gigantea*, which I got fifteen or more years ago from Max Leichtlin, who, I believe, received it from one of his Russian friends in Turkestan. It is earlier and taller in growth, and has much larger flowers than the common red variety, but increases so slowly that I have never been able to get more than about one small off-set yearly, and these take some time to come to flowering size. The most beautiful variety is, I think, the yellow one, which is also the tallest, and when strong has two whorls of flowers like the

so-called Crown-upon-crown, which was known to Parkinson and Miller, but is, I think, only due to excessive vigour in the bulb, which often produces fasciation of the stem. Then we have a dwarfier red-flowered form with golden-striped leaves, perhaps the best gold variegation of any hardy bulbous plant, and quite constant, which is not often the case in such sports. All these three can be distinguished by the different colour of their leaves as soon as they come up. There is also an orange-flowered form, which, to my eye, is not so beautiful; but a white variety, though I have heard of its having once appeared in Holland, I have never seen, and this is the more remarkable, as white-flowered varieties of our common *Snakeshead* are in certain meadows in the Thames Valley quite numerous. I shall never forget the delight of that wonderful lady, Miss Marianne North, when I took her, more than thirty years ago, to see such a meadow for the first time; with the energy which she still possessed, though an old and feeble woman, she worked away with a trowel till she was quite exhausted, and some of the bulbs which we then dug up have reminded me of her ever since. The genus *Fritillaria* is a very numerous one, fifty-two species having been recognised by Baker in his paper in the *Linnean Society's Journal* published in 1874. To this number a good many have been since added, mostly from the Levant and Western Asia, but I venture to think that any botanist, who would now study this genus in the garden as well as the herbarium, would reduce the number of so-called species very materially; for the characters by which they have been distinguished are, in my judgment, too slight, and seem to be often due to environment. I find that in 1887 I had no fewer than thirty-one in cultivation at Preston, near Cirencester, where I then lived. Two of the most beautiful, namely, *F. aurea*, from Cilicia, and *F. recurva*, from the Pacific coast of America, soon die out here. *Aurea* is a very dwarf plant with large golden tessellated flowers, which does not seem, like most of the genus, to tolerate much lime in the soil, but I saw it doing well in a frame at Mr. Godman's garden near Horsham. *F. recurva* is constantly imported, but no one, so far as I know, has established it. It belongs to a different section, *Liliorhiza* of Kellogg, in which the bulbs are mainly composed of many small scales, and not solid, like those of the European and Asiatic species. The Black Lily, *F. camschatcensis* (*Sarana edulis*), is one of these, and has a singular and wide distribution, from Eastern Siberia, through Japan and North-West America, where its bulbs are a common food of the natives in Kamshatcha and the Kurile Islands. It does not succeed well in this country, but I keep it alive, as its very dark flowers are almost unique in colour. Another curious plant which inhabits the deserts of Western Asia from the Caspian Sea through North Persia to Afghanistan and Baluchistan, is *Rhinopetalum Karelini*, which when at its best, is a very beau-

* Since this was written a much worse snow blizzard occurred on March 27-28, which has done more damage both to Conifers and deciduous trees than any storm that I can remember, mainly, I think, because the snow was so wet and clinging.

tiful and distinct plant. I have flowered it more than once in a frame, after a hot, dry summer, but it will not endure mild winters, and wet, sunless weather such as we have had this winter, and is rather a plant for the curious than for general cultivation. There are several other species now showing bud, about which I hope to say something later.

The first Tulip to flower is *T. Kaufmanniana*, which was ready to open a month ago, before the snow came, and seems quite uninjured by the weather, though the leaves of some other Tulips are much damaged. When the sun allows it to open this is not only the earliest and hardiest, but also one of the most beautiful Tulips, and ought to be taken up by florists as the foundation of a new race. I have not tried it as a pot plant, but think it would be very suitable, and easy to have in January or February without forcing. The species varies immensely in colour, as shown on plate 6887 of the *Botanical Magazine*, where three flowers grown by me from bulbs sent by Dr. Albert Regel from Turkestan are figured. Of these the most beautiful, which I have now lost, has the outer segments deep rose, and the inner ones flamed with rose. The pure yellow flower in the centre of the plate seems to be the commonest form, and a batch of seedlings raised some years ago are like this, with the outer segments more or less flamed with rose. A hybrid raised between this species and *T. Greigii* by Messrs. Van Tubergen, of Haarlem, is now opening its flower, which combines the colour of both parents without the beauty of either; but the leaf is that of *T. Greigii*, with chocolate blotches, and these leaves do not resist frost and wet so well as those of *Kaufmanniana*. *H. J. Elwes.*

[In article IV. (p. 160, col. III.) the name *Isopyrum grandiflorum* was erroneously printed in line 37. The remarks on seeding, etc., referred to *Anemone blanda syethinica*.—Eps.]

NOTES ON IRISES.

SOME TIBETAN IRISES.

By the kindness of Mr. Reginald Farrer I recently received from Chinese Tibet specimens of all the Irises that he saw and collected during the collecting season. The specimens are accompanied by notes and by photographs of the plants growing in their native habitats, and our information is therefore unusually complete.

The specimen No. F. 496 is *Iris ensata* (see fig. 80), which is probably by far the most abundant of all the Asiatic members of the *Iris* genus. In some places, as, for instance, in the neighbourhood of Kashgar in Turkestan, it covers whole stretches of otherwise barren country, and anyone who has attempted to dig up a well-established clump of this Iris must have noticed the extraordinary length and abundance of the root fibres which enables it to withstand drought to which other plants would succumb. *I. ensata* is very abundant also on the lower ground in Kashmir, in the neighbourhood of Srinagar, for instance, and it is apparently no less common in Eastern China, near Peking and in Shantung, and also in Japan. Plants from all these widely separated localities closely resemble one another, though there is a considerable range of colour in the flowers, from pure white with a few greenish veins through the common pale slaty blue to dark blue and purple shades.

It is a curious fact that, though Tibet is roughly the centre of the area over which the various forms of *I. ensata* are distributed, yet the Tibetan form is so distinct as almost to deserve a specific name. By the kindness of the late Mr. W. Gumbleton I received some year ago a packet of seeds from Gyantze in Tibet, and since then I have received from time to time other specimens from the same country,

which, however, always reproduce the same form. The foliage is dwarfer and stiffer than that either of the typical Japanese form, which Thunberg first described, or of those that I have obtained from Turkestan or Shantung. The standards are of a pale lavender, and the falls are edged with the same colour, while the central portion is a pale creamy white or primrose-yellow, faintly and delicately veined with lavender. The blade of the fall is twice as broad proportionately as it is in the case of the type, where the falls are noticeably narrow. Mr. Farrer's note on his Tibetan specimens says that the plant is "very abundant all over the grassy loess plains and slopes from Sining throughout the Da-Tung Alps to 11,000 feet, in enormous drifts and masses. Deliciously sweet. May to June. Six albinos seen, some seeding almost true." His letter adds: "One of the most remarkable points about F. 496 is its extraordinary stability. True, I have seen some seven albinos, which sounds a good number, until you remember that I have covered very many miles all sheeted with this Iris to the number of many millions of plants. While minute inspection may detect here and there a

native to widely separated regions of the earth is always interesting. Among the heedless Irises the seeds and the capsules that contain them seem to give sure indications of affinity, and a comparison of the known species shows that the only relatives of *I. ensata* are the members of the longipetala group from the western United States. Mr. Farrer's F. 499 is a specimen of *I. tenuifolia*, Pallas (see fig. 82), a plant which can only be compared with the Mediterranean *I. unguicularis*. In habit it is very similar; it produces practically no stem, and herbarium specimens show that the capsules even remain, as in *I. unguicularis*, hidden down at the base of the leaves, often in old clumps actually below the ground level. Mr. Farrer in his letter remarks that search among the leaves revealed the decaying capsules of past seasons. A plant which thus hides its seeds cannot easily disperse them, and consequently it is never very abundant, but occurs "in small colonies or clumps in the loamy loess grass downs about Chebson Abbey." The flowers are freely produced in May of about the size and colour of the Black Sea form of *I. unguicularis*, which has recently been brought into cultivation under the names



FIG. 80.—*IRIS ENSATA* TIBETICA IN ITS NATURAL HABITAT.

slightly greater amplitude of fall or depth of lavender featherings round its edge, the general effect of each plant is as like that of the next as one egg to another." This is the Iris to which Mr. Farrer has referred in his notes as "hyacinthina."

In view of this uniformity it was therefore all the more surprising that Mr. Farrer should have found a single plant (F. 501) with a very distinct colour scheme, growing among the innumerable examples of the usual lavender form. In this unique specimen (see fig. 81) the lavender is replaced by deep blue purple, producing a very striking flower and a very desirable form of *I. ensata*. A photograph of a plant of the common form (see fig. 80) shows how extremely floriferous this Iris can be in suitable conditions. Unfortunately, in common with many other plants, this Iris suffers more from late spring frosts in our uncertain English climate than from the much severer winter temperatures that prevail in Tibet. It should therefore be grown in a position that affords some protection from the bitter east winds of March and April, when the young growths push up rapidly and are especially susceptible to injury.

The question of the affinities of the species

of *pontica* and *lazica*. The colour is a blue purple, with the white ground showing through on the centre of the blade. There is a central streak of yellow running along the haft. As in *I. unguicularis*, the flowers are supported on slender perianth tubes, 6 inches or more in length. *I. tenuifolia* is an attractive and floriferous plant in its native home, but my experience of it as a garden plant has been most disappointing. Some plants that I once received from the neighbourhood of Quetta survived for a year or two, but made no satisfactory growth, while the solitary seedling that I have raised has contented itself with producing three leaves in as many years. For this Iris Mr. Farrer's provisional name was *hypogaea*, given presumably with reference to its habit of hiding its seed capsules at or below the ground level.

The record for altitude is held among Irises by *I. Potaninii*, Maximowicz, which has been found growing at a height of no less than 18,000 feet in Tibet. F. 500 is a specimen of this species which corresponds to the European *I. pumila*, from which, however, it is easily distinguished by the curiously blunt leaves and by the masses of fine fibrous remains of former leaves that surround the base of the new

growths. The original description gave the colour of the flowers as yellow, but herbarium specimens show that, as in *I. pumila*, purple flowered forms occur, and Mr. Farrer's specimens confirm this. *I. Potaninii* would certainly be a welcome addition to our rock gardens, if only living plants or seeds could be introduced.

Closely allied to *I. Potaninii*, and sometimes confused with it, is another small bearded Iris, the *I. Tigridia* of Bunge, which is represented by F. 498. It grows in small clumps on "the steep loess bluffs amid scantiest scrub," above the Da-Tung River, and flowers in May. Mr. Farrer describes its flowers as follow:—"Standards soft purple, styles soft blue, falls of intense claret-purple suffused with ultramarine and of velvety look." *I. Tigridia* is usually a little taller than *I. Potaninii*, from which it may be readily distinguished by its leaves, which taper gradually to a fine point. The stem is as tall as the leaves, which in the present specimens are about 6 inches in length. Both are distinguished from the dwarf *Pogoniris* of Europe by the semi-transparent membranous sheaths that wrap the base of the growths and by the fibres that surround these sheaths. These fibres are upright and straggling in *I. Tigridia*, but usually curl round in tight masses in the case of *I. Potaninii*.

The specimen numbered F. 497 I take to be *I. Bungei*, Maximowicz, though whether there is any specific difference to separate that species from *I. songarica*, Schrenk, is perhaps open to doubt. At any rate, both are Eastern representatives of the great *Spuria* group. The flowers are small, not unlike those of a small Spanish Iris, and Mr. Farrer notes that they are "intensely fragrant of violets." He found plants "occasionally in good clumps on the hot loess downs above the Halls of Heaven, especially on the torrid banks ascending from the Da-Tung River; May 20; 9,000 feet." It is a dwarf plant, with a stem only a few inches in length, closely surrounded with narrow rigid leaves.

F. 124 is a small slender form of *I. goniocarpa* "abundant in the lightest scrub and Alpine turf of the Da-Tung chain at 10-12,000 feet, May." It is much to be hoped that this delightful little Iris, with its mottled flowers of blue purple and white, may before long be introduced into cultivation. According to Mr. Farrer's experience of the plant, in its native home this should not be difficult, "for, while the dry ground Irises here seem characteristically resentful of disturbance, you can do just what you like with *I. goniocarpa*; a beautiful albino, taken upon a hot day en route and carried round the country for a fortnight, is now not only perfectly happy in the little garden I have rigged up in the yard, but is even bearing a fat pod, apparently containing sound seed." Let us hope that the plant may prove as amenable to cultivation in our gardens as Mr. Farrer found it in China. W. R. Dykes, *Charterhouse, Godalming*.

The removal of the numerous new trees and shrubs from the nurseries to their allotted sites in the grounds has been effected. The greater part of the new introductions of Mr. E. H. Wilson from China (which have made the greatest showing in our nurseries during the past decade) have now been dealt with.

ADDITIONS TO TREE AND SHRUB COLLECTIONS.

The disappearance of the firm of Messrs. James Veitch and Sons, of Chelsea, from the horticultural community has meant to Kew the loss of a very prolific source of new trees and shrubs, as well as of other plants. For many years their nursery at Coombe Wood was visited regularly by members of the staff who, it may

packet of seeds of *Rhododendron dilatatum*, a beautiful deciduous species which, hitherto, has been extremely rare in this country. They germinated very freely. Numerous seeds collected by Mr. Forrest in China were received, and from Messrs. Bees some seeds collected by Mr. Cooper in Bhutan. Mr. J. C. Williams made an interesting contribution in a white-flowered variety of *Erica australis*, collected by his son, the late Lieut. Robert Williams, in the south of Spain. This, so far as we know, is new to cultivation and to science. Mr. Gerald W. Loder gave Kew a plant of the very rare *Acanthopanax setchuenense*. Of this species there was, a few years ago, a bush in the Coombe Wood nursery raised from Wilson's seed which



FIG. 81. VARIETY OF IRIS ENSATA TIBETICA, WITH BLUE-PURPLE FLOWERS.
(From a photograph by Mr. R. Farrer. See p. 194.)

TREES AND SHRUBS.

THE KEW ARBORETUM.

WE learn from the *Kew Bulletin* that the chief work during the early winter season consisted in the taking down of old trees, especially Elms, which could no longer be considered absolutely safe. Among them were two of the "Seven Sister" Elms. The removal previously of two others of these Elms was recorded in the *Bulletin*, 1914, p. 33, and but one of the original seven was left, only to be destroyed by the storm of March 27-28 (see p. 198). Although several severe storms passed over Kew in November and December, the only loss of any note was the uprooting of one of the fine Beeches growing a little north-west of the Azalea Garden. On this area which, in contrast to the greater part of the Gardens, has a deep loamy soil, the best Beeches in Kew are now growing.

safely be said, never came back empty handed. The war has practically closed the Continent to traffic of this kind, so that new additions to the collections in 1915 have been much below the average of the last few years. A consignment was received from the Arnold Arboretum early in the year containing, amongst other things, new Hickories, Oaks, and Poplars. From the same establishment came a plant of *Sargentodoxa cuneata*, which constitutes a new genus of Rehder and Wilson belonging to the Lardizabalaceae. It is a deciduous climber, and is described as having pendulous racemes of yellow flowers. Professor Sargent also sent some seeds collected by Mr. Wilson during his recent travels in Japan. Amongst them was a very welcome

at that time appeared to be the only one in the country, but which went to the United States. A valuable collection of shrubs was received from the Edinburgh Botanic Garden that had been noted during an official visit by the Assistant Curator last May. An interesting addition to the Arboretum collection was a plant of *Stuartia serrata*, 5 or 6 feet high, given by Sir Edmund G. Loder, of Leonardslee. The Hon. Vicary Gibbs sent a number of rare species from his great collection at Aldenham. The establishment is also much indebted to the late Canon Ellacombe and to Mr. F. R. S. Balfour for valued contributions.

The following new trees and shrubs have flowered during 1915: *Alnus lanata*, *A. sitchensis*,

A. Spathii, *Amelanchier pumila*, *Berberis sanguinea*, *Betula Medwediewi*, *Celastrus flagellaris*, *Clematis Fargesii*, *S. Pavoliniana*, *Cotoneaster salicifolia* var. *floccosa*, and var. *rugosa*, *Enkianthus himalaicus* (Chinese form), *Escallonia Balfouri* (pterocladon and rubra), *Euonymus sanguineus*, *Fraxinus Paxiana*, *Photinia subumbellata*, *Prunus Conradinae*, *P. Dielsiana* var. *laxa*, *P. polytricha*, *P. tibetica*, *Pyrus* (*Sorbus*) *Kochiana*, *P.* (*Sorbus*) *setschwanensis*, *Rhododendron discolor*, *R. erubescens*, *Rosa Davidii* and var. *elongata*, *R. Gentiliana*, *R. Helenae*, *R. longicuspis*, *R. lucens*, *R. Rubus*, *R. Sweginzowi*, and *Syringa affinis*.

THE FLOWER BORDER.

PERENNIAL PHLOXES.

THERE is no method of propagating Phlox more simple than that of dividing the roots, but it is not the best method. The plants will repay for the extra trouble of striking them from cuttings by producing better flowers. Some prefer to strike their Phloxes in autumn; for myself I have practised striking them in spring when thinning out the shoots. The cuttings are either inserted in pots or pricked out into a

composed of good fibrous loam, well-decayed cow manure, and sand, the pots being well drained. As soon as the weather is mild they are plunged out of doors in coal ashes, and are sheltered from high winds, but exposed to the full sunshine. As soon as the roots have become well established in the new soil they are given an abundant supply of water, with occasional doses of liquid manure. As the Phlox is a plant that makes great quantities of roots, much moisture is essential to preserve the foliage in perfect health, which is a matter of prime importance, seeing that much of the beauty of any plant depends on the proper development of healthy foliage. Apply stakes as the plants advance in growth, and when they are coming into flower remove them to the conservatory, when they will amply repay for the trouble that has been bestowed on them. Phloxes are good plants for pot culture, and few who have not seen them could imagine the extreme beauty of a collection.

To get full value from the out-of-door Phloxes it is best to plant them in beds by themselves, planting them 18 to 20 inches apart. The soil should be thoroughly trenched and richly manured, and abundant supplies of water are necessary during dry weather when they are in active growth. The shoots should be thinned to about four to each plant, selecting the strongest. A mulching of half-decayed cow manure over the roots is beneficial, as Phlox spreads its roots near the surface. One care must be taken that they are not injured by deep hoeing close to the plant. *James A. Paice, Aldenham Vicarage Gardens, Watford.*

FRUIT REGISTER.

DWARF APPLES IN AMERICA.

TEN years' tests in three orchards have convinced Messrs. V. P. Hedrick and F. H. Hall that the growing of Apples on dwarfing stocks is not likely to prove profitable to professional growers in America. Apples grown on dwarfing stocks, they find, come into bearing but little earlier than those grown on standard trees, and though a larger num-

ber may be grown to the acre, there is no evidence that their total yield is greater than that from standards.

It is claimed, also, that in the cold climate of New York State dwarf and semi-dwarf trees are more readily injured by frost. The union between scion and stock is less perfect than in standards, the dwarfs, owing to their shallow-rooting system, are more easily uprooted by wind, suffer more from drought, and do not permit of so thorough a cultivation of the soil. Moreover, to maintain the trees as dwarfs summer pruning is necessary. The origin of the tests is interesting. They were undertaken when it was apprehended that San José scab had come to stay in New York State, and it was believed that the only effective remedy was by fumigating the trees under tents.

The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

EUPHORBIA (POINSETTIA) PULCHERRIMA.—Cuttings of this plant may be rooted now, and as soon as there is a plentiful supply of shoots for the purpose a large batch should be propagated. Some find a difficulty in striking the cuttings because they use shoots that are too soft. This trouble may be overcome by placing the stock plants in a cool house for a few days before taking the cuttings, which should be prepared with a heel of the old wood attached. Insert the cuttings singly in 2½ in. pots filled with fine sand or a sandy compost and plunge the pots in a brisk hot-bed in a propagating case. Spray them with clear water two or three times a day and shade them from bright sunshine until roots develop. Insert fresh batches of cuttings as the shoots for the purpose develop.

CODIAEUM (CROTON) AND DRACAENA.—Young plants of *Codiaeum* and *Dracaena* require plenty of heat and moisture. Arrange the *Codiaeums* near the roof-glass, for much sunshine is needed to produce rich colouring in the leaves. A little air may be admitted in the forenoon, but the house should be closed early in the afternoon after spraying the plants with lukewarm rain-water.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

ONCIDIUM.—The genus *Oncidium* embraces a large number of species and need a warm, intermediate, or cool temperature. A few species are in flower the greater part of the year, and for this reason the work of repotting is spread over the whole season. It is best to repot when roots appear at the base of the new growths. Most, if not all, *Oncidiums* are benefited by the inclusion of a few partially-decayed Oak or Beech leaves in the compost, which should consist of *Osmunda*-fibre and *Sphagnum*-moss. Fill the pots one-third full of material for drainage. Make the rooting medium moderately firm about the base of the plant. Water the roots carefully at all times. Watch closely for the presence of thrips and other insect pests on the young growth, and take suitable measures to destroy them directly they are detected. Certain of the warm-growing species are producing flower-scapes, and must be afforded ample water to assist them in developing their inflorescences. *Oncidiums* have the reputation of deteriorating a few years after importation, but this is, in a large measure, due to their freedom in blooming, the size of the spikes being a contributing factor in sapping the plant's energies. Weak plants should not be allowed to flower, whilst the scapes on healthy, robust specimens should be removed directly the last flower is fully developed, if the front pseudobulb shows the least sign of shrivelling. *Oncidiums* requiring a warm house include *O. ampliatum*, *O. Carthaginense*, *O. haematocylum*, *O. Papilio*, *O. Kramerianum*, *O. Lanceanum*, *O. luridum* and *O. Cavendishianum*. A few species, such as *O. macranthum*, *O. superbum* and *O. tigrinum*, will succeed in the cool division, whilst the others need an intermediate temperature throughout the year.

DECIDUOUS CALANTHES.—The majority of deciduous *Calanthes* are ready for repotting. The compost should be mixed thoroughly at least a week before it is required. One-half should consist of fibrous loam, the remaining part a mixture of chopped *Sphagnum*-moss, *Osmunda*-fibre cut up fairly fine, dried cow manure, and half-decayed Oak leaves, with a moderate sprinkling of crushed crocks. Select only the best fibrous portions of loam, sifting out the dusty particles. The cow manure should be dried and rubbed through a fine meshed sieve.



FIG. 32.—IRIS TENUIFOLIA GROWING WILD IN CHINA.

(See p. 194.)

cold frame, where they are kept moist and shaded during sunshine for a fortnight or so, after which period more light and air are admitted. When fairly rooted they are turned out and planted in a bed of light, rich soil, and well watered in, when they soon start into growth and make strong plants by autumn.

If required for pot culture, they are potted in autumn into 5-inch pots; otherwise they are left in the bed till the following March, when they are put into the quarters assigned to them. Those in pots are kept in cold frames all the winter with just sufficient moisture to keep the roots in a healthy condition. Abundance of air is admitted on all favourable occasions to prevent them from starting too early into growth. When the pots are filled with roots the plants are shifted into their flowering pots, using soil

Use ordinary flower-pots and fill each receptacle one-third of its depth with drainage material, which should be covered with a layer of fresh turfy loam. The loam will prove beneficial to the plants at about the time when the new pseudo-bulbs are being formed. Shake the old soil from the roots, and shorten the latter to within half an inch of the base of the pseudo-bulb. This little tuft is usually sufficient to hold the plants in position until the new growth is established. The pseudo-bulbs should be graded, placing those of the largest size singly in 5 or 6-inch pots, and the others in receptacles proportionate to their size. Some growers prefer placing the pseudo-bulbs singly in pots, but where space is limited five, or even six, of moderate dimensions may be arranged together in a fairly deep pan about 7 or 8 inches in diameter. This method is especially recommended where large quantities of cut blooms are needed. In repotting, make the soil moderately firm, and bring it up to within half-an-inch of the rim of the pot. This will allow space for watering, and a little top-dressing later in the season if necessary. When the repotting is finished let the new shoot rest upon the soil, not covering it in any way.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

HARDY ANNUALS.—The best hardy annuals include *Lavatera*, *Larkspur*, *Clarkia*, *Candytuft*, *Mignonette*, *Virginian Stock*, *Anagallis*, *Brachycome*, *Collinsia*, *Godetia*, *Nigella*, *Nasturtium*, *Coreopsis*, *Centaurea*, *Alyssum*, *Gypsophila elegans*, *Poppies* and *Matthiola bicornis*. The soil should be made fine by raking, and the seeds scattered very thinly. A little of the soil may be removed by the rake and used for covering the seeds, but the better plan is to prepare finely sifted soil for strewing evenly over them. After sowing and covering the seeds water them by means of a rose-can, but if the soil is of a nature that cakes after being watered moisten the soil a few hours before sowing. A dusting of soot will serve, to some extent, to keep birds from the seeds, but the safer plan is to use netting or cotton. Thinning the seedlings is tedious work, and apt to be postponed, but it is imperative to do the work before the plants become crowded.

A BORDER OF ANNUALS.—Considerable skill is needed in arranging an effective border of annuals. The height to which the plants will grow and their date of flowering will differ according to the locality and the nature of the soil, therefore a trial border should be planted. The time and labour involved in doing this is more than compensated for by the knowledge gained. It is not a very difficult matter to arrange the groups in a border so that no one colour clashes with its neighbour, but it must be borne in mind that the border is usually viewed from end to end, and it may easily happen that two groups of colour which are far apart by many yards would appear to clash with each other because they are in the same line of sight. A narrowing down of the number of varieties grown, the elimination of colours which are difficult to associate with one another, and an attempt to balance the colours throughout the border, will produce a better effect than trying to include a large number of species and varieties.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHOTE, Eastwell Park, Kent.

GRAFTING FRUIT TREES.—Healthy trees of inferior and out-of-date varieties make excellent stocks for re-grafting with more suitable sorts. Such trees that were headed down at the time of winter pruning should be trimmed of a few more inches whenever the sap is rising, to enable the grafts to be inserted in sound bark. There are several methods of grafting which can be done with success in ordinary conditions. Crown grafting is the most convenient method for trees of a large size (see fig. 83). The scions having been partly buried in a moist border for some time, should be taken out of the soil and the graft made

6 to 8 inches long, retaining three or four buds on the upper part. Make an incision in the bark of the stock, cut the lower end of the graft in a sloping direction, and fit the latter neatly in the incision made in the stock. Bind the two together closely, but not too tightly, with matting, and thoroughly smear over the part with grafting wax or clay, whichever is used. For a small number of grafts French cold grafting wax is to be recommended as being convenient to handle and reliable for the purpose.

WHIP OR TONGUE GRAFTING (see fig. 84).—This method is usually adopted when grafting young stocks. Remove the top of the stock at the joint, and make a slit in the bark in an upright direction. Cut the scion to fit in the slit already made, with a slight shoulder to fit on the top of the stock. A tongue having been made in the stock and a similar one in the scion, fit them perfectly together. In the case of the stock and scion being of unequal size, see that at least one side of each are in perfect union. Tie the scion to the stock firmly, as with crown grafting, and cover with wax or clay to exclude the air. Watch the grafts closely during times of drying winds for the first signs of cracking in the clay or wax. Cracks may be closed in the case of the clay by damping it and squeezing together by the hand, or, with wax, filling the crevice with fresh material.

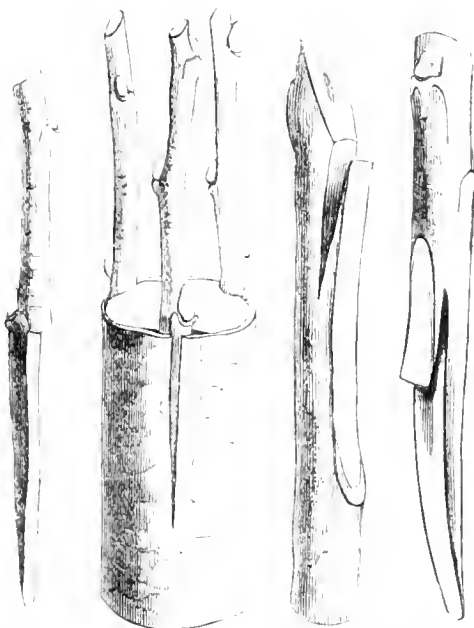


FIG. 83.—CROWN OR RIND GRAFTING.

FIG. 84.—WHIP OR TONGUE GRAFTING.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warton Priory, Yorkshire.

EARLY VINES.—Very early Grapes are already past the stoning stage, and will soon be swelling finally. So long as the vines continue to produce strong laterals it is a fair sign that they have not been overcropped, but in the case of pot vines the growths may be weak and yet the foliage be healthy and the Grapes finish well. It will do very little good at this late stage to remove the superfluous bunches, but the vines may be afforded some relief by removing some of the berries which show signs of crowding. This thinning must be the last time that the bunches are touched. All the ties must be sound, but not too tight. See that the foliage in dry, warm corners remains healthy and free from red spider. As every new leaf at this stage assists the roots, and Black Grapes colour best when there is plenty of healthy foliage, the laterals should be allowed to grow for so long as space can be found for them. Top-dress and feed the roots of pot vines with warm, liquid manure, diluted to a suitable strength, guano and soot-water, but when the Grapes are ripening use clear water only. At that stage the amount of atmospheric

moisture should also be reduced, and the quantity of fresh air increased whenever the weather favours a free ventilation of the house. If the variety *Madresfield Court* is included amongst the pot vines, guard against the least drought at the roots before the berries have attained their full size, as a check from drought, followed by a copious application of water, often results in the loss of some of the finest berries of this variety through splitting.

SUCCESSIONAL VINERIES.—The vines in later houses are in various stages of development, and require incessant attention; every requirement should, so far as is possible, be seen to at the proper time. Let disbudding be done at short intervals. When the work is finished the shoots will grow freely, and, in a few days be ready for stopping, tying, and divesting of their superfluous bunches. In all cases, the first bending of the shoots should be very slight, as it is better to bring them down to the trellis by degrees than to snap them off and make gaps through undue haste. The work of pinching the shoots and thinning the bunches must not be delayed, whilst all superfluous bunches must be removed, if not before, immediately after the berries have set. Use the thinning scissors early, and endeavour to get rid of all stoneless berries at the first operation. Late vines are backward this year, and their development should be hastened by the use of a moderate amount of fire-heat, closing the house early and syringing the vines freely twice a day with tepid water until they have broken well into growth. Late Grapes may be grown in a temperature of 55° on cold nights and 65° to 70° by day, rising to 75° after closing the vinery, with sun-heat and plenty of atmospheric moisture. As soon as the bunches are prominent the warmth may rise 5° at night, and when the vines come into flower the temperature may register 65°.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

BROAD BEANS.—Make a final sowing of Broad Beans in rich deeply-cultivated land to provide late supplies. These late plants are usually attacked by the black aphid, therefore, as soon as sufficient pods have formed, pinch out the tops of the plants.

CELERY.—Make another sowing of Celery to obtain plants for a late supply. Germinate and grow the seedlings in cool conditions; a cold frame is suitable, and they should be planted in a few inches of fine soil. Keep the frame close until the seeds have germinated. Afterwards admit air, increasing the amount gradually, until finally the lights are removed entirely. The seedlings may be pricked out of doors in a sheltered position immediately they are ready for transference. Afford them protection from frost and cold winds. Celery should never be dry at the roots at any stage of its development.

CARROTS.—Make another sowing of stump-rooted Carrot on ground that was manured the previous season. A heavy dressing of wood ash will benefit the plants.

TURNIPS.—Sow a good breadth of this vegetable in a warm situation. Scatter the seeds thinly in shallow drills made 15 inches apart. Thin the seedlings immediately they are large enough to handle, and dust them frequently with soot to ward off attacks of the Turnip beetle and slugs. It may be necessary to protect the seeds from birds. White Milan and Snowball are suitable varieties.

KOHL RABI.—This vegetable may be grown on hot, dry soils from which Turnips are rarely palatable. Follow the directions given for Turnips. Earliest White and Earliest Purple are two good varieties.

ASPARAGUS.—Clear the beds of weeds, and stir the surface lightly. Light soils should receive a dressing of salt, but where the soil is heavy and cold wait until the soil is warmed before applying this material, as salt lowers the temperature of soils, thus retarding the crop.

EDITORIAL NOTICE.

Letters for Publication. as well as specimens of plants for naming, should be addressed to the **EDITORS, 41, Wellington Street, Covent Garden, London.** Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, APRIL 10—
United Hort. and Ben. Prov. Soc. Coms. meet.
TUESDAY, APRIL 11—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
Roy. Inst. (Lecture by Prof. F. Keeble, on "Modern Horticulture.")
WEDNESDAY, APRIL 12—
Sheffield Chrys. Soc. Show and Lecture. Roy. Hort. Soc. School Teachers' Exam.
FRIDAY, APRIL 14—
Nat. Rose Soc. Spring Show in R.H.S. Hall.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observation during the last fifty years at Greenwich, 46.0°.

ACTUAL TEMPERATURE:—
Gardener's Chronicle Office, 41, Wellington Street, Covent Garden, London. *Thursday, April 6* (10 a.m.): Bar 29.3, temp. 46.0°. Weather Cloudy.

SALES FOR THE ENSUING WEEK.

MONDAY, WEDNESDAY AND FRIDAY—
Liliums and other Hardy Bulbs, Herbaceous Plants, Shrubs and Roses, at 12, by Protheroe & Morris, at 67 and 68, Chancery Lane, E.C.
MONDAY AND WEDNESDAY—
Rose Trees, Perennials, Gladioli and Begonias, at Stevens' Rooms, 38, King Street, Covent Garden, W.C.
WEDNESDAY
300 cases Japanese Liliums, also Maples, at Protheroe and Morris' Rooms
THURSDAY—
Roses, at Protheroe & Morris' Rooms, at 1, Nursery Stock at Paul's Nursery, High Beech, Epping Forest, by Protheroe and Morris, at 12.
FRIDAY—
Plants in pots and effects, at Mid-Kent Nurseries, West Wickham, by Protheroe & Morris, at 12.
Hybrid Orchids, at 1, at Protheroe and Morris' Rooms.

The Recent Gales.

Seldom, indeed, in the annals of British silviculture has there been anything to equal the havoc caused amongst trees by the severe gales of last week. On March 27 and 28 the north winds were at gale all over the country, and, in the view of many the winds were doubly disastrous owing to the snow that clung to the trees as a wet blanket, increasing the weight of the boughs and rendering them less able to resist the gale. Whilst the wind generally was from the north, some of our correspondents describe it as veering round the compass in a kind of whirlwind. The result is that the casualties were enormous, exceeding anything of the kind experienced in recent years, and amongst the trees which were uprooted are many grand specimens that had no equals in this country. It will most likely be found that Elms have suffered most; but Poplars, Chestnuts, Cedars, and indeed most kinds of trees, both deciduous and evergreen, are counted amongst the fallen. In cases where large specimens in specially appropriate positions have been sacrificed the loss will be felt with peculiar and lasting regret, for such trees are, in a sense, irreplaceable. Only after the lapse of an indefinite time can a tree develop to that stage of full growth which is most admired, and its highest attractions are a gift to the next

generation rather than to those who may plant it. It is much the same with trees which serve as screens. Where these are lost the huge gaps cannot at once be made good, but for many a day the view they once adorned suffers, and reminds us continually of the first disappointment. At Kew a noble Cedar was beaten down by the pitiless wind and snow, and crushed in its fall the Temple of the Sun, which it had guarded for 150 years. Kew afforded no more noble sight than this temple, overspread by the gigantic Cedar, and encircled by fine specimens of the Turkey Oak, Robinia, Diospyros, Elms and other trees, remnants of the "Old Arboretum." In 1860 this arboretum still enjoyed a flourishing existence, and included fine examples of various species of Quercus, Platanus, Populus, Fraxinus, Juglans, Cedrus, Pinus, Liriodendron, Ailanthus, Gymnocladus and Halesia with thickets of Rhododendrons, Berberis, Rhus, and other shrubs.



FIG. 85.—TEMPLE OF THE SUN AT KEW AND THE OVER-SPREADING CEDAR AS THEY APPEARED BEFORE THE RECENT GALES.

We print the following particulars of the serious damage inflicted in certain famous gardens, but they only deal with a very small proportion of the losses sustained throughout the country. Whilst it is impossible to publish every detail of ordinary casualties, it is essential that records should be made of losses in which unequalled specimens are involved, and in order to make the record as complete as possible our correspondents should estimate the age of the tree, and send us careful measurements of height and circumference of trunk.

From Dropmore the gardener, Mr. Charles Page, sends the following details:—

Fifty-four Cedars were blown down in the avenue, eight more of these trees are hopelessly wrecked, whilst the remainder are all more or less damaged by the fall of those that are down. In addition to these, nine Cedars have fallen in other parts of the grounds, including the finest specimen of *Cedrus atlantica* at

Dropmore. Spruce, Firs and Scotch Pines fell in groups.

Not much damage was done in the pinetum, with the exception that a fine Lebanon Cedar had a large limb blown out. The large tree of *Abies Douglasii* is but very little damaged, and, so far as I can ascertain, we have not lost a single Douglas Fir, nor any Pines excepting the Scots. Elms are down in all directions, but very few Oaks were uprooted.

The morning of the 28th ult. was very calm, but the barometer fell nearly one inch by midday, and snow commenced to fall about 3 p.m., with a strong wind from the north, which soon became a hurricane with fine snow that froze on the branches as it fell. The weight of the snow was, no doubt, the cause of so much damage to the Cedars, as the branches became top-heavy. I shall not soon forget the experience of standing near to the Cedar avenue and seeing and hearing the crash of falling trees.

Our Kew correspondent writes that on the 28th ult. high wind with a blizzard of snow raged with more or less severity for some hours, but the most serious damage was done in the afternoon between six and seven o'clock. The direction of the wind was north, but at times it seemed to come from all directions at once.

In the Royal Botanic Gardens some twenty-five large trees were uprooted, among them unfortunately several of the best representative specimens of their kind in the garden, and at least two of the best recorded specimens in the country. Several smaller trees were blown down or were so severely damaged that their removal is inevitable. Other large trees had limbs torn away, leaving them permanently disfigured, while hundreds of trees and shrubs were blown out of the upright, and will need supports.

The Temple of the Sun (see figs. 85 and 86) was destroyed, as recorded above, by the fall of the 75-feet high Cedar of Lebanon. There is a dramatic touch in the fact that these two important features should have originated and ended together. The Temple was built in 1761, and the Cedar is said to have been brought from the Duke of Argyll's garden at Whittington and planted during the same year. Thus for more than 150 years they have been associated, the individual character and beauty of the one adding to the landscape effect of the other.

The Temple of the Sun was the most ornamental of the five Temples at Kew. It was designed and built under the direction of Sir William Chambers, who was also the architect of the Chinese Pagoda, erected in 1761-2. The site of the Temple of the Sun is the centre of the original or first Botanic Garden of 1760. The building was circular, and surrounded by eight fluted columns with the entablature richly ornamented. The roof or ceiling inside was adorned with a representation of the sun, the surrounding frieze relieved with the twelve signs of the zodiac.

The last of the "Seven Sister" Elms lies a wreck uprooted by the storm. Tra-

dition credits the planting of these trees to the seven daughters of George III.

One of the greatest losses is the specimen of *Buxus balearica* growing near the Temple of the Sun. It was 24 feet high, probably the highest in the country, with a trunk $2\frac{1}{2}$ feet in circumference. Aiton gives 1780 as the year of introduction, and it is one of the trees mentioned by Loudon. The best specimen at Kew of *Cedrus Deodara* growing near the Wood Museum has gone. It was 64 feet high, with a girth at the base of 9 feet 3 inches, and was coning fairly freely. Five Lombardy Poplars forming part of a long row of these trees skirting the river boundary wall went down near Kew Palace, considerably damaging the wall, and in the case of three of the trees the impact was so great as to completely uproot them, and it was a curious sight in the morning to see the butts suspended 3 to 4 feet above the ground.

A beautiful spreading tree of the Bay Willow, *Salix pentandra*, growing in the Botanic Garden of 1843, 50 feet high, is another distinct loss. This was known to be decayed at the base, and a few years ago the decayed wood was removed and replaced with concrete. Several other Cedars and Elms, a fine specimen of *Prunus Padus*, *Abies Veitchii*, 31 feet high, a beautiful Yew of tree-like growth and a straight trunk, *Cupressus macrocarpa* and several Spruce are other victims of a storm which will not soon be forgotten.

Dr. Botting Hemsley sends the following particulars of damage at Bushey Park:—Probably only a small number of persons know from actual observation that the Bushey Park avenue of fine old trees consists of five rows, the outermost row facing the road being Horse Chestnuts, and the rest Limes. The latter have evidently long passed their prime, are rapidly decaying, and are almost alone sufferers from the violence of the late storm. I walked through the avenue on the 30th ult., and noted some of the main features of the destruction. Entering the Teddington gate (the north side of the park) I saw on the immediate right about half-a-dozen prostrate Lime trees, within an area of little more than the square of the length of one of them. They had fallen away from the north-west. The position of these trees is opposite the scene of the great disaster of some eight or ten years ago. No Horse Chestnut was down in this neighbourhood, and I believe only two or three had succumbed in the whole avenue, though many large branches were broken off. Here and there was another Lime stretched on the ground, and these were mostly torn up by the roots. Perhaps the greatest damage was done in the eastern part of the secondary avenue, which cuts at right angles the main avenue by the Diana Pond. There may be ten or a dozen trees lying across the avenue, from north to south, but I had not time for closer inspection. From Teddington Gate to the Diana Avenue there are just about 1000 trees in the main avenue.

We have already referred (p. 189) to damage in the Hon. Vicary Gibbs' garden

at Aldenham. His gardener, Mr. Edwin Beckett, states that other places in the neighbourhood suffered even more severely. He writes:—At Wall Hall, the residence of J. P. Morgan, Esq., the group of *Cedrus atlantica* and *C. Libani*, which was regarded as one of the finest in the country, encountered the full effects of the gale—nearly all the trees in this group were swept to the ground, in addition to more than one hundred other large trees, mostly Elms.

Munden, the residence of the Hon. Holland Hilbert, adjoins Wall Hall, and this estate suffered even worse. Mr. Hilbert states that nearly four hundred trees were levelled to the ground, including one of the finest specimens in England of *Picea Pinsapo*. Large numbers of Elms, Oaks, and Beeches in particular were unrooted.

At Edge Grove, the residence of R. Bennett, Esq., which is close to Aldenham Church, about one hundred and twenty trees have been destroyed, and the charm-

promise of fruitfulness this year, were uprooted.

Along the road for three-quarters of a mile, between Aldenham and Watford, no fewer than thirty-four large Elms were torn up and thrown across the road or immediately by the side of it. Only by the aid of a large number of troops were these roads opened for vehicular traffic in two days. In many places damage was done to mansions, small houses, lodges, and other buildings. Fortunately no loss of life occurred in this part, though many narrow escapes are reported. Several of our men were trapped between two large trees, one falling in front and another behind them.

At Dover House, Roehampton, the property of Mr. J. Pierpont Morgan, thirty-one trees were destroyed, including a magnificent Lebanon Cedar, which stood on the north front of the residence. Most of the specimens that were uprooted were Elms and Chestnuts. In one row of Elms as many as twenty-one were blown over.



FIG. 86.—THE RUINED TEMPLE OF THE SUN.

ing little park, which contained many fine trees, has been practically cleared of every notable specimen. At Newberries, the residence of G. Miller, Esq., about one hundred trees were brought down. The destruction of a fine group of *Cedrus Libani* at Parkbury, the residence of Colonel Cartwright, half-way between Radlett and St. Albans, is a loss to the country. These magnificent trees were admired both by pedestrians and those travelling on the Midland Railway. They are said to have been planted by a son of the great Duke of Marlborough. No fewer than twenty of these Conifers are uprooted, together with a number of other Pines. At Aldenham House we have lost about two hundred large trees, and many others are severely damaged, in addition to hundreds of smaller trees and shrubs. Fine old Apple, Pear, and Plum trees in a small orchard connected with one of the farms on the estate, which offered great

ROYAL HORTICULTURAL SOCIETY.—The next meeting of the committees will take place on Tuesday, the 11th inst., in the Vincent Square Hall, Westminster. At the 3 o'clock meeting in the Lecture Room Mr. E. M. HOLMES will deliver an address (instead of that previously announced) on "Growing Medicinal Herbs and Plants in Great Britain."

R.H.S. SALE OF PLANTS IN AID OF THE RED CROSS FUNDS.—By an accidental omission I regret that the name of Mr. H. J. ELWES, F.R.S., was not included in the list of the members of the committee given in my previous communication on this subject. W. Wilks, Secretary.

HELP FOR THE RED CROSS FUND.—Messrs. PROTHEROE AND MORRIS announce an important sale of 2,500 choice and rare hybrid Orchids, with a selection of valuable varieties of species, at their Central Sale Rooms, 67 and 68, Cheapside, London, E.C., on Friday, April 14, at one o'clock. One-half of the net proceeds will go to the Red Cross Fund. The vendor's name is not disclosed.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.—The Committee of the Gardeners' Royal

Benevolent Institution have granted the following amounts from the "Victorian Era Fund" to those unsuccessful candidates at the last election who were formerly subscribers to the Institution:—

Name.	Applica- tions.	Life member. Years.	Annual subscriber. Years.	Amount to be granted 1916. £ s. d.
Tough, Edwin	7	—	7	6 0 0
Wilson, George	7	—	7	6 0 0
Harding, Albert	6	13	—	6 0 0
Crossman, Richard	5	—	14	8 10 0
Hewitt, Mary	5	15	—	6 0 0
Milford, Sarah A.	5	9	—	5 0 0
Burden, Charles	4	—	17	9 10 0
Earl, Elizabeth E.	4	—	8	5 10 0
Bradley, George	3	—	21	10 0 0
Byrne, Henry	3	28	—	8 10 0
Chudleigh, Henry	3	16	—	5 10 0
Gibson, Thomas	3	—	21	10 0 0
Meadows, Mary E.	3	24 (double)	—	8 0 0
Pike, George	3	—	15	9 10 0
Roberts, Ann	3	16	—	5 10 0
Samuels, John	3	22	—	7 0 0
Weeks, William	3	18	—	6 0 0
Marsh, Eliza	2	22	—	7 0 0
Newell, Charlotte	2	—	14	8 10 0
Pugh, Mary	2	23	—	7 0 0
Smith, Mary	2	—	15	8 10 0
Stonard, Emily A.	2	7	—	4 10 0
Stone, Fanny	2	28	—	8 0 0
Walker, George	2	12 (double)	—	8 0 0
Bridges, Charles	1	19	—	5 10 0
Bryden, Robert	1	8	6	8 0 0
Carling, Thomas	1	17	—	5 10 0
Carroll, Mrs.	1	—	10	6 0 0
Cox, William	1	26	—	6 0 0
Drewett, John J.	1	16	—	5 10 0
Sparks, Louisa J.	1	—	10	6 0 0
Tickell, James H.	1	—	21	9 0 0
Upton, Elizabeth	1	—	26	9 10 0
Manning, Mary	6	Occasional contributor	—	4 0 0
Bowley, John	2	"	"	3 10 0
Murray, John	1	"	"	3 10 0
				£246 0 0

WAR ITEMS.—Private ARTHUR GILES, of the 6th Royal West Kents, who before the outbreak of hostilities was employed as journeyman in Walden Gardens, Chislehurst, Kent, was wounded in both legs and the right arm while his company were holding a crater on March 8. After undergoing two operations at the base hospital in France he has been transferred to the Wharnccliffe War Hospital, Sheffield.

—An appeal for exemption from military service for an estate forester in Scotland was made on the ground that the whole estate forestry system and work would be disorganised if the man were taken. It was stated that the present contract for pitprops would last for over a year, and that the estate men were in charge of the cutting of the timber. Exemption was refused, as it appeared that the contractor had the responsibility for the timber-cutting.

PYRUS SORBUS.—An interesting ceremony took place in the Wyre Forest on Thursday, March 30. A young specimen of *Pyrus Sorbus* was planted on the spot marked by a post put up in 1911, where the old historic tree of that name grew. The young tree was a sapling, grown for the purpose, by the late Captain ROBERT WOODWARD from a seed of the tree growing in the grounds of his home at Arley Castle. This tree is a descendant of the original one, which was burnt down by an incendiary in 1862, and was grown from seed by Lord MOUNTNORRIS early in last century. The old tree, therefore, will now be represented in the same spot by a descendant. The arrangements for planting and protecting the young tree from rabbits and deer were made by the Worcestershire Naturalists Field Club, whose members assembled in goodly numbers to see it done. A history of the original Wyre Forest *Sorb* tree appeared in the *Gardeners' Chronicle* of April 15, 1907, contributed by Mr. ROBERT WOODWARD, junior.

SPARROWS AND LARCH TREES.—Sparrows are now turning their attention from the fading Crocuses to the Larch trees. By wrecking the Crocuses these mischievous birds follow their pragmatist philosophy, being in search of saffron, of which they are passionately fond. But they wantonly destroy the tiny flowers, familiar to few who are not botanists, that bring a pink flush

upon Larches just before the trees burst into the loveliest shade of green known to nature. They do not eat the flowerets of the Larch, but merely peck them off out of sheer devilry, and what the old Puritans would have called "bloody-mindedness." This is why so few cones are found on Larch trees where sparrows abound. *Westminster Gazette*.

IMPORT OF FLOWERS INTO GERMANY.—We referred (p. 174) to the anxiety which was felt by the Dutch horticulturists owing to the recent prohibition of import of flowers into Germany. It appears now that the sale price of Dutch flowers has actually decreased, but less than was feared, as an important trade is being started with Austria, where no restrictions have yet been put on importation. The German decree applies to all live plants and parts of plants used for decorative purposes as enumerated in numbers 38, 39, 41, 42, 43 and 44 of the Zollvereintarif. Exception is made for number 40, tubers and bulbs, and these, as is well known, have a large part in the export of Dutch horticultural produce.

PUBLICATIONS RECEIVED.—*The Rose Annual*, 1916. (London: National Rose Society, 25, Victoria Street.) Price 2s. 6d., post free, to non-members.

THE ROYAL PARKS.

WE give below extracts from the official verbatim report of the discussion which took place in the House of Commons on Thursday, March 30, on the vote of credits for the Royal Parks and Pleasure Gardens of London. The subject of the wages paid to the employés was considered, and the position taken by Mr. Harcourt was that the Government could not recommend increases, notwithstanding the dearness of food. It is greatly to be regretted that drastic reductions in the plants and flowers in the parks have been decided upon, as the parks and gardens of London are the outdoor meeting-places of the masses during the greater part of the year, and nothing should be left undone that would increase their attractiveness. The increased price of coal was mentioned as accounting for extra expenditure to the amount of £1,200—a considerable sum, but, as Mr. Harcourt observed, there would be no saving involved in allowing the plants to die from frost in the winter when a little warmth would preserve them. The position in regard to the summer bedding is summed up in Mr. Harcourt's words, "It will be a poor show, but a fine economy."

ROYAL PARKS AND PLEASURE GARDENS.—

Class I.

Motion made, and question proposed.

3. "That a sum, not exceeding £54,000, be granted to His Majesty, to complete the sum necessary to defray the charge which will come in course of payment during the year ending on the 31st day of March, 1917, for the Royal Parks and Pleasure Gardens." [Note.—£45,000 has been voted on account.]

Mr. Whitehouse: I wish to ask one or two questions in regard to Kew Gardens. I cannot see in this vote any allowance made for the admission fees that the right hon. gentleman will get from the new charge that has been levied at Kew. I should like to know where the account is to be rendered, and where the credit is to be given for the admission fees which are now being charged. I greatly regret that this small charge of a penny per head should be made. It means seriously interfering with the use which is made of the gardens by working-class families, and especially by poor children.

Mr. T. Richardson (Whitehaven): I have to raise a matter affecting the wages of employés in the parks and pleasure gardens. I hope there is a feeling in the Committee that the employés

in the Royal parks and pleasure gardens have not received that measure of justice that they are entitled to. I find this matter has been the subject of an interview between the representatives of the union concerned and the right hon. gentleman, and also, I believe, of a question addressed to him in November last. My hon. friend (Mr. Snowden) put the question, and the reply was as follows:—

"My information is that the men employed in the Royal parks receive the same rate of wages as in the London County Council parks and the Zoological Gardens, except as regards war bonuses. The difference in wages is therefore 3s. and not 6s. per week. The question whether the Royal park employés should not receive a war bonus is receiving attention."

It will be observed that the last paragraph of that reply indicates that the matter has been the subject of consideration by the Treasury and the responsible heads of Departments. I was more than surprised when I was informed that we have labourers and gardeners working in the Osborne House gardens in these times at a wage of 21s. per week. My information is that not one of these employés has received a war bonus of any kind at all, either large or small, and, in view of the answer given to my hon. friend, I sincerely hope that the right hon. gentleman will be in a position, considering the very low wages paid to these men even in pre-war times, and in view of the admittedly substantial increase in the cost of living, to announce an advance of wages for these men. I find that in the Dover Military School the gardeners and labourers receive a wage of 23s. per week. I think it would be true to say that probably the cost of living, including rent, at Dover, is as high as in any other place covered by the operations of the Works Department. The Hampton Court and Bushey Park men also receive 23s. per week.

In view of a deputation having waited on the right hon. gentleman to urge their claims, and in view of the further fact that notwithstanding that the wages are admittedly low and substantially less than the average rate of wages paid by private employers of labour, it is not too much to hope that the right hon. gentleman is now prepared to concede to these men their legitimate and reasonable demand for an increase of wages. More than one-third of the men employed on this particular class of work have, so I am informed, enlisted in His Majesty's Forces, and the inevitable result of that is that the men who remain in the employ of the State have been called upon to work undoubtedly harder than they did before. I refer to that point particularly because the right hon. gentleman, on the occasion of the deputation interviewing him, pointed out, as a reason why in other industries advances of wages had been given, the fact that because of large withdrawals of men to the Colours those remaining had been called upon to work very much harder. I hope that all sections of this House will be in agreement with me when I say that to expect a married man with wife and family to be able to live in these times on wages of 21s., or even 23s., a week is to expect the impossible. I submit that a wage of 21s. or 23s. a week is not sufficient for any man in any part of Great Britain to meet the liabilities devolving upon him as a householder. I strongly urge the claims of these men for immediate and proper consideration.

Mr. Hogge: I very cordially support the general claim of my hon. friend the Member for Whitehaven (Mr. Richardson) in regard to these sums. I would point out to my right hon. friend opposite that in the pensioners' scheme, which this House agreed to, a family without the husband is sometimes getting nearly as much as that to live on, so that the question of wage is really a serious question. I want specifically to refer my right hon. friend (Mr. Harcourt) to the case of the Edinburgh park-keepers. He will notice that there are six park-keepers who are in receipt of a wage of 25s. a week. I do not know what

the Committee thinks of that as a wage for a married man and his family, but it is quite obvious that if you compare that figure with some of the wages that are paid elsewhere there is too great a disparity. For instance, if the right hon. gentleman will cast his eye on the same page of the estimates, he will see that there is mentioned a female typist who is in receipt of 26s. a week. Of course, that female typist has only herself to maintain, and has better working conditions than park-keepers. The park-keepers have themselves and their wives and families to maintain, and they are in receipt of only 25s. a week.

Colonel Lockwood: They get clothes as well.

Mr. Hogge: There is an allowance further down for clothing for park-keepers and gate-keepers, and I presume it is sufficient clothing for the time they are on duty. There would, of course, require to be an allowance for that, and sometimes there is an allowance for residence, but that does not apply to these men. The men in this particular class are ordinary park-keepers, and have no other privilege, I understand, but the privilege of clothes. One of the reasons, presumably, why these wages get down to this figure is that this is the kind of work which soldiers and sailors who have been slightly wounded can very easily perform. Presumably some of these men are in receipt of pensions, and it is a very usual thing that the effect of a pension is to lower the wage. It is really a bonus on low wages. I want my right hon. friend to avoid that, and if he can—it is not asking a very great deal, because there are only six of these men involved—I hope he will see his way to increase this wage of 25s. a week. There was some correspondence with the Office of Works on this particular matter before my right hon. friend went there, and the case was being looked into. I think something was actually done, but I still say that 25s. a week is too little, and I hope my right hon. friend will see his way to increase it.

Colonel Yate: I would ask the right hon. gentleman to bear in mind how important it is to keep these appointments of park-keepers open for deserving soldiers and sailors. Although they may get a little less wage than the current market rate for gardeners and other men, I trust that these positions will be kept solely for old soldiers and sailors, and that no deviation will be allowed from that rule.

Mr. Harcourt: The hon. member for Whitehaven (Mr. Richardson) raised the question of the wages of park-keepers. I have seen the men, and I understand their case. I know, of course, that on all of us there is a pressure falling owing to the increased price of commodities and of all the necessities and minor luxuries of life. That is not a ground which the Government have been able to admit for rises in wages throughout the country. There have been war bonuses given for various reasons, but there has never been any agreement that the country is bound to raise salaries or wages merely owing to the increase in the cost of commodities. I am sorry to say that this is one of the miserable inflictions of war which we must all share, and it is one of the ways in which we all of us make our contribution to the war. I quite admit that that contribution falls more hardly upon people with a very narrow scale of wages. The hon. member mentioned a figure of 21s. as if that was a common or an existing rate of wages for park-keepers. That is not so.

The wages in the London parks are from 26s. to 27s. a week, and in the country parks from 25s. to 26s. I do not say it is a high wage, but it is a possible wage, and it bears comparison with the wages paid for similar occupations by private employers and others. I did submit the case of these park-keepers to the Treasury for their decision, but the Treasury decided that they would not permit an increase in their wages. I have done my part. I have put their position fairly before the Treasury, and that was the decision they came to. The hon. member for East Edinburgh (Mr. Hogge) mentioned the case of the

park-keepers in Edinburgh. I am happy to say that recently their wages have been raised, not on the ground of increased prices, but because the local rates generally in the locality have been raised. I understand that the park-keepers there recently had their wages raised from 22s. to 24s. or 25s., at which they now stand. I understand that that is the local rate, and is in accordance with the Fair Wages Resolution of this House, and that substantial justice has been done to these men. In none of these cases has the rate of wages any reference to the fact that a man may be a wounded and pensioned soldier or sailor. The hon. member for Melton Mowbray (Colonel Yate) asked that these posts should be kept open for disabled and wounded soldiers and sailors in the future. That has been very largely our habit in the past, and it will be still more our habit and intention in the future to devote as many of these places as possible to those who return from the war in a position not to take up the ordinary avocations of life, but in a position to render proper service in such a post as this.

ECONOMIES IN MANAGEMENT.

Sir F. Banbury: May I point out to the right hon. gentleman that last year item A was £95,250; this year it is £81,000 for maintenance and repairs. I presume including the laying out of beds of flowers and other matters. I am sure everyone will agree that the right hon. gentleman and his predecessor deserve very great credit for the very beautiful way in which they have kept the parks. When I was a boy they were in a very different state. I am sure that everybody derives a great deal of pleasure from walking in the parks and seeing the beautiful plants and flowers that are growing there. That is all very well in peace time, but in war time I do not think that that ought to go on. We require a considerable staff to grow the flowers, and a considerable amount of fuel in the winter. Naturally they cannot be maintained except at a very great expenditure of money. The reduction is very small. Last year, from what I could see—and I looked into it very attentively—practically no reduction had been made in the laying out and moving of the plants, and in the general ornamental upkeep of the gardens. This year apparently some little attempt has been made at reduction. I know that the right hon. gentleman is fond of everything that is beautiful. So am I when war is not going on. But I would suggest to the right hon. gentleman that he should endeavour still further to cut down this Vote. I do not intend just now actually to move a reduction, because I hope by persuasion to effect my object. I will not say any more at the moment. I think that the right hon. gentleman thoroughly understands my proposal. Even my right hon. and gallant friend (Colonel Lockwood), who is so fond of flowers, no longer wears a flower. He is showing signs of economy, and the Government should follow his example.

Colonel Lockwood: I hope that my right hon. friend (Mr. Harcourt) will not for a moment listen to the proposition made by the right hon. baronet, who knows nothing at all about gardening. I should like to point out that an enormous reduction must have been made by the stopping of the spring bedding alone. As regards the other flowers, the expenditure has already been incurred, and practically in another month they will be bedded out. I think that the public would miss them very much in the event of their total abolition. They give an enormous pleasure to a great variety of people, not only to well-to-do people like the hon. baronet, but also to working people and children. I think that my right hon. friend has exercised a very wise discretion in doing away with the spring bedding, but I should be very sorry indeed to see any alteration in the arrangement of beds in the park when summer time comes.

Mr. Ashley: I rise to support my right hon. friend the member for the City of London, because it is not merely a question now of doing

what is pleasing to the eye. The question now is—and a very serious question it is for the country—how to save every single pound, shilling, and penny which we can keep in our pockets. I am sure that if the Government have shut up museums, where you can really get instruction, and go in when it is wet, it is simply waste of money to have any bedding plants at all. I would suggest to the right hon. gentleman that he should put an end to it. The parks are open to everybody, the trees are beautiful, and if people can go there to take fresh air and exercise that ought to be enough in time of war.

Sir J. D. Rees: I feel some difficulty, in the presence of the right hon. and gallant gentleman (Colonel Lockwood), in speaking about flowers, but I feel that I should not be doing my duty if I did not say that I agree thoroughly with the right hon. baronet, the member for the City of London. At a time like this no public money should be spent on plants or on aesthetic amusements or pleasures of that sort. There is one item which has not been commented on—that of £2,450, salaries for the Edinburgh Royal Botanic Gardens and Arboretum, as against only £295 for the Royal Botanic Gardens at Kew, which are an institution, as I know, having spent a great deal of my life abroad, of world-wide importance. There is surely some discrepancy here. No one wants to grudge the beautiful city of Edinburgh anything which it can get—I am one of those who are often there—and least of all would I desire to do so. But this is a very large sum.

Mr. Harcourt: I find myself in a position of some difficulty between two hon. and right hon. friends of mine who take very diverse views. I have often said of myself that I am a gardener by profession and a politician by accident. But I have sacrificed my gardening predilections for those of a rigorous economist. The reduction is really larger than the right hon. gentleman the member for the City of London quite appreciates. The reduction appears to be £14,250, but allowance must be made for the fact that there is an extra pay-day this year, which adds £550. In addition, I have had to make an allowance of £1,200 for the increased cost of coal. If it had not been for those exceedingly necessary increases the real saving in maintenance would have been £16,000. As soon as I came back to the Office of Works in May last year—because the right hon. and gallant gentleman, who is a gardener, knows we have to consider our gardening some time in advance—I went into this very carefully, and I decided that practically all expenditure should be cut down on the show of flowers in the parks.

Colonel Lockwood: Even in summer?

Mr. Harcourt: Yes; expenditure of any kind, either for the spring show or the summer show. I have either turned over or left derelict all the beds down Park Lane. I have covered over a very large number of beds, and some beds in Hampton Court. I do not regret it, because I think that it is an example which is good for people. But it is an example for which I shall be blamed later on in the year by those who will say that it is an example of squalor. I thought, however, that it was an example that was rightly set. There will be no bedding out of annuals in the ordinary sense of the word, but, of course, our glasshouses in the park contain a certain number of permanent plants. It is not good economy to allow those to die of frost during the winter. I have kept in the houses the minimum of heat that is necessary to preserve the plants from frost. Such plants as exist there will be put out in the parks, but no plants will be brought forth and no money will be spent. It will be a poor show, but a fine economy. It has been suggested that some of these beds should be used for growing vegetables. That is an absurd suggestion. What I want to save is not only the expenditure on plants, but also the labour, so as to release men to go to the Colours and for other operations.

Question put and agreed to.

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

CANTELOUP MELONS (see p. 181).—Dr. Durham's method of cultivating Canteloup Melons differs widely from the system practised by French growers. They never shade the plants except at the time of setting them out in the frames, or in the nursery beds; in fact, they are all agreed that sunshine is the key to a successful crop. Ventilation is afforded from the earlier stage of growth, and the amount is increased gradually in bright weather, until the shelter of the glass is dispensed with during the warm days and nights of July and August. During the glorious summer of 1911 we had hundreds of fruits ripening in the hot sunshine without any shelter. Many growers obtain fruits 6 to 8 lbs. in weight. The heaviest specimen I have seen turned the scale at 13 lbs. 10 ozs. Such large size is not detrimental to the quality if care is taken to cut the fruit at the proper stage of ripeness. For general purpose Canteloup Prescott Hâtif is preferred, especially if one can get the selected strain, which varies somewhat from the original type. The fruit is spherical, and practically smooth, the segments being only noticeable as a greenish vein. The cicatrix is hardly apparent, while the rind is extremely thin, and the flesh reaches nearly to the centre. The tradition mentioned by your correspondent with regard to the sowing of the seeds is strictly adhered to with good cause, and owing to the high percentage of female flowers produced by old plants raised from old seed, coupled with constant ventilation, so many fruits are produced, and without resorting to pollination, that they have to be thinned. Owing to the Canteloup Melon being a bad traveller one cannot judge fairly of its succulence and flavour by the imported fruits which have to be cut before they are properly ripe. Epicurus state that to judge the quality of a Canteloup at its best the fruit should be well ripe, cooked for a few hours, and the flesh eaten sprinkled with a little salt. *P. Aquinas*.

—Dr. Durham's article was most interesting to Melon-growers and others, but where can we purchase the varieties he names? As he states, one can get hardy frame Melon and mixed Canteloups; judging by my experience they are very mixed. From a few plants of hardy frame Melon grown last year I got two kinds, and neither of them was so good either in size or flavour as a green-fleshed Melon grown alongside. Dr. Durham states that his largest Canteloup last year was 3 lbs. 5 ozs. I cut many Melons weighing 5 to 6 lbs. each, the difference probably being accounted for by the fact that mine are grown on hot-beds. In the case of Marrows, two-year-old seed produces more fertile plants. The average Marrow plant develops a number of male blooms first, but I find that plants raised from two-year seed (and older) often throw female blooms first, especially if grown under glass. *C. E. Bridgett*.

BEE DISEASE (see pp. 161, 179).—Many would be interested to know the experiences of bee keepers who, having lost their stocks through the Isle of Wight disease, have tried to make a fresh start. Mr. Kennedy Bell states that the bacteria of the disease can live in the soil and bushes for twelve months, and this news is most disquieting. We lost our stock of ten hives, which were in the best possible condition, last autumn. They stored a record amount of honey, besides having the brood chambers well filled, but there seemed to be an unusual lot of bees "running" home along the paths, and then some "crawlers," on plants in front of one hive, which a visiting expert pointed out as a bad sign, and when a few days later a good number from another hive stayed out all one cold night on a Strawberry plant. I feared the worst. Wasps were teasing them a little about this time, and the bees in two hives died soon afterwards, and although I saw some crawling about the fronts of several hives and making marks like that from dysentery one mild day about the end of January, they have all gone since. The disease has apparently been working in a semi-circle from 4 to 8 miles north of these gardens for two or three years, numerous stocks

having been lost in this radius. Two apiaries of 7 hives $1\frac{1}{2}$ mile from here, but three miles apart, were lost last autumn, but both the owners blamed wasps as the cause, as the hives were simply smothered with them. I am informed by a good authority that, judging from accounts he has received, the disease is rampant all through the county of Devon. One "old hand" near here, who is a victim, does not blame the Isle of Wight disease for his misfortune, but his own carelessness in not putting his bees into mourning when a relation died. I only know of two colonies in straw skeps near here. The old bees are "sulphured" every year, and only the young ones retained. We have had some very strong colonies under the leaded roof and in the walls of the Abbey. I have known at least eight swarms (mostly travelling ones from elsewhere) go in one place in a few years. These are also all dead; perhaps some of these or the wasps brought the infection. Every swarm we have would go there if we did not fight them with water from the hose and syringes, the former being always kept ready fixed in the season. We may be able to fill up the entrances, but cannot get out the bees or combs without seriously damaging the roof. We intend starting with a stock of Italian bees, as much for the purpose of setting our fruit as of obtaining honey. *A. Shkelton, Forde Abbey Gardens, Chard*.

THE VITALITY OF PRIVET.—In the year 1914 I found myself in the position of having to deal with a long-neglected garden. It was necessary in October of that year considerably to reduce some huge bushes of oval Privet, the growths of which varied from stems of 2 inches in diameter to suckers of a year old. For nearly three months the Privet lay in a heap with worn-out Rose bushes, Ivy trimmings, and other rubbish. Before starting a bonfire, the best of the Privet—much of it was 5 to 6 feet in length—was selected, bundled up, and set aside for sticking Sweet Peas, to which use it was put in April or May of 1915. At that time it had been fully seven months cut, and exposed to all weathers. In the July following, new shoots were seen issuing from some of the sticks. These new growths were restricted to stems of from half to three-quarters of an inch diameter, the smaller twigs, and the larger branches of firmer wood, having perished. That the brash and sappy growths should soon lose vitality in the circumstances is, perhaps, easily accounted for, though it is not so clear why the growths of the diameters indicated should be endowed with a greater vitality than the rest, and be capable of growth so long after severance from the parent plant. *E. H. Jenkins*.

HUT GARDENS FOR CONVALESCENT SICK AND WOUNDED SOLDIERS.—May I through your courtesy appeal to your readers for gifts of suitable herbaceous and hardy plants, small shrubs, such as Euonymus and Veronica Traversii, rock plants, seeds, and even small forest trees (for the camp roadsides), with the view of planting the open spaces by the headquarters, and inducing the men to make gardens round their huts, in a large camp of several thousand convalescent sick and wounded soldiers in regiments of the London Command "Somewhere in England," thereby giving them a healthy employment to enable them to become fit before returning to their regiments at the front? Donations for the same purpose will be very gratefully accepted, and these will be also used for the purchase of tools, and for monthly prizes for the best-kept and best-planned gardens in the camps comprising the depot. I shall be pleased to give fuller information as to making arrangements for plants, etc., to be sent direct to the depot. (Mrs.) Charlotte N. Wrenmore, 34, Bilsiz Grove, Hampstead, London, N.W.

R.H.S. LECTURER DECEASED BY THE STORM.—Your readers who attended the fortnightly meeting of the Royal Horticultural Society on March 28, hoping to hear the lecture by Mr. George Forrest on his "Explorations in China and Thibet," will be interested to know why he was not present. As the chairman anticipated, the storm which was then raging was responsible. He writes that he left Fleetwood in Lancashire early on the Tuesday morning, and reached Crewe without any signs of the storm, and left there by the 10.38 train, due at Euston at 1.45.

In passing Stafford the storm zone was entered. All telegraph wires were down on both sides of the line, and as a result the train had to be flagged into and through each section, and it did not reach the city till 9.30 p.m. His inability even to get a wire through to us added to his sense of discomfort. He was courageous enough to catch the 10.10 train back to Crewe, where he arrived at 8.30 the following morning. He asks me to let it be known how disappointed he was to be unable to deliver the lecture he proposed. He hopes it will be possible for us to arrange another date either later on this year or early in 1917. *W. Wilks, Secretary*.

TRIALS OF POTATOS.—I have spent several hours studying the Report of the trial of Early and Mid-season Potatos carried out last year at Wisley. The report extends from page 290 to 304 in the *Journal of the Royal Horticultural Society*, dated December, 1915, and is one of the first-fruits of the reorganised methods at Wisley. The culture must have been excellent, because many of the results work out over twenty tons per acre. This shows that Mr. S. T. Wright's hand has not lost its cunning. A most commendable step is that of setting out clearly the varieties which have done best in the trials—that is the sort of information which is helpful to the average Fellow, and the best among one hundred and seven varieties are worth knowing. Here they are:

FIRST EARLY VARIETIES.	
Duke of York.	Midlothian Early.
SECOND EARLY VARIETIES.	
General Joffre.	Sir John Llewelyn.
Old Ashleaf.	Stirling Castle.
Sharpe's Express.	Witch Hill Seedling.
MID-SEASON VARIETIES.	
Arran Chief.	Shelton No. 20.
Great Scot.	Wolfe's Secundus.

In the descriptions, which each run to four or five lines of letterpress, several errors have crept in, but knowing, as I do, that Mr. Titchmarsh and many members of the Wisley staff joined H.M. Army while the work connected with the trial was in progress, I am not going to be critical. I hope to propose in the proper quarter an arrangement which will secure accuracy in the future if it is adopted. There cannot be the slightest doubt that the reports of trials in this volume of the *R.H.S. Journal*—Potatos, Peas, etc., etc.—mark the greatest advance yet made in this important department of the Society's work, and indicate that Dr. Keeble is as keenly alive to the interests of the practical man as he is to those of the scientist. Anyone in his position who was not would soon bring even such a marvellously strong society as the R.H.S. into troubled waters. I am exceedingly glad that the names of the best varieties in each colour class of each section of Tulips are published, as here again the average Fellow wants to know the best without having to study a volume of several hundred pages—he wants them sorted out for him, whereas the specialist glories in a volume containing the names and descriptions of a thousand varieties. In connection with Potato trials which are being carried out every year by agricultural, horticultural, and educational organisations throughout the country, I think it would be a splendid move to endeavour to have them standardised. The Wisley plan is to plant twenty tubers of each variety 18 inches apart in drills 30 inches apart. I do not know exactly what the Wisley method of manuring is, and whether or not artificials are applied, but I feel that if the Wisley system, or any other jointly-approved system, were adopted by the Edinburgh and East of Scotland Agricultural College, by the Armstrong College, by the Leeds University, by the Midland Institute, by the Holmes Chapel and the Harper Adams Colleges, and as many others as possible, valuable comparative results would be obtained. Half a dozen or a dozen standard varieties could be agreed upon to grow at each establishment for comparison with all others grown. *W. Cuthbertson, Edinburgh*.

GRAPE COOPER'S BLACK.—As *E. M.* suggests on p. 142 of the *Gardeners' Chronicle* many are of opinion that this Grape is identical

with Gros Maroc. As the discussion was raised in the first place as the result of some bunches which I exhibited before the R.H.S. Fruit Committee during the past season, I shall be glad to add briefly what I know about it. When taking charge of the gardens at Sandown House, Esher, between thirty and forty years ago, I was much impressed by the Grape in question, which, in a mixed house of Vines, always did well and finished off its fruit superbly. When leaving, I brought with me a small stock, and have grown it at Aldenham satisfactorily ever since. I have found it a good cropper, a strong grower, and a good keeper, and the berries always take on a high finish. Whatever this variety may be, I am convinced it is not Gros Maroc or Kempsey Alicante. I have always been more or less doubtful as to whether it was Cooper's Black, hence my reason for placing it before the Fruit Committee of the R.H.S. I cannot say I am now more convinced as to its real identity than before. *Edwin Beckett, V.M.H.*

SOCIETIES.

ROYAL HORTICULTURAL. Scientific Committee.

MARCH 28.—*Present:* Mr. E. A. Bowles, M.A. (in the chair), Sir J. T. D. Llewelyn, Canon Fowler, Messrs. Hales, Ledger, Odell, Allard, Worsley, Fowler, Rolfe, Fraser, Col. Rawson, F. J. Chittenden (hon. sec.) and Rev. J. Jacob, visitor.

Curious larva.—Mr. W. C. Worsdell showed preserved larvae of a species of *Aspidomorpha* from the shores of Delagoa Bay. The larvae, which feed on *Ipomoea*, cover themselves with excreta as do the larvae of *Cassida* in Britain.

Meconopsis × decora.—Mr. T. Hay, of Greenwich Park, sent a plant of *Meconopsis × decora* with white flowers. Several plants had been raised, some having white, some blue flowers, and after being cut back they freely produced flowers again. No seed was produced. The plants were raised from seeds obtained from India and from the Botanic Gardens, Edinburgh, under the name of *M. Wallichii*, but those raised proved to be something different. Sir D. Prain named it *M. decora* (see *Kew Bull.*, No. 4, 1915), but subsequently came to the conclusion that it was a hybrid. It has appeared in several gardens, but whether the seed in these cases came from India or from Edinburgh cannot be stated.

Narcissus Cyclamineus ? × *N. Tazetta* "*Soleil d'Or*."—A plant raised by Baron de Soutellinho, of Oporto, of this interesting cross was exhibited. The hybrid had a deep orange cup and a clear yellow spreading perianth. "*Soleil d'Or*" apparently rarely proves a good pollen parent. A Botanical Certificate was unanimously recommended for this plant.

Narcissus triandrus albus.—Mr. H. Clinton Baker, of Hertingfordbury, sent some plants of a *Narcissus* which he had collected in Spain. The flowers showed a certain amount of variation in size, but did not agree with the figures (*Bot. Mag.*, 6473) and description of the plant under whose name they were exhibited, *N. pallidulus*, the original description of which states it to be "*pallidi sulphureus*." They were apparently good forms of *N. triandrus*.

Freesias breaking.—Mr. Jacob said that in his experience *Freesias* (except the yellow forms) were apt to "break" in the same way as Tulips, the colour becoming patchy.

EAST HAM CHRYSANTHEMUM.

MARCH 13.—The thirteenth annual meeting of the East Ham Chrysanthemum and Horticultural Society was held on Monday, the 13th ult., Councillor H. Barfield presiding.

The event of the year was the three days' exhibition, the number of entries exceeding that of the previous year. The committee regretted, however, that owing to decreased income they were obliged to reduce the prize money by 25 per cent.

The financial statement showed receipts amounting to £69 4s. 8½d., and expenditure to £68 8s. 2d.

The report and balance-sheet were adopted. The following elections took place:—President, Sir John Bethell, Bart., M.P.; chairman, Councillor Barfield; vice-chairman, Mr. W. E. Hobbs; hon. treasurer, Mr. W. R. Cleghorn; hon. secretary, Mr. A. Bone; assistant hon. secretary, Mr. C. V. Turner; committee, Messrs. W. C. Bull, Chapman, A. Cook, J. R. Dobson, L. B. Farrant, A. Gevaux, R. P. Griffiths, H. T. Jacobs, E. W. Lewington, E. Lucas, J. R. Nash, and J. Tyler.

NATIONAL CHRYSANTHEMUM. LECTURE ON RAISING CHRYSANTHEMUMS.

MARCH 20.—At a meeting of the above society at Carr's Restaurant, Strand, London, on the 20th ult., Mr. Percy A. Cragg delivered a lecture, entitled "How to Raise Seedling Chrysanthemums." Mr. D. B. Crane presided. Before the lecture commenced the meeting passed a vote of condolence with the relatives of the late Mr. W. Wells, and it was decided to

especially if really double flowers are desired. Before passing to the actual work of crossing, I will describe the flower and its parts.

In l. fig. 87, the footstalk, or peduncle, is shown enlarged and flattened at its top into a receptacle, in which the flowers are embedded. Around this receptacle is an encircling guard of bracts or scales, which hold the flowers securely. On the receptacle are two types of flowers—one hermaphrodite or complete flowers—that is, with both male and female organs. These are similar to those composing the eye of a single, and are known as disc florets; and the other, female, or ray flowers, known as ray florets in a single and ligulate florets in the doubles. The disc florets (III. B.) have three parts—the floral envelope or corolla, the stamens which bear the pollen, and the pistil, the lower part of which is the ovary. The ray or ligulate florets (II. B.) have only two parts, the corolla lengthened into a petal and the pistil.

The corolla has two forms in the disc florets, one, as in the eye of a single (III. A.), usually green at first, then changing to yellow; the other, as in the cushion of the anemone varieties

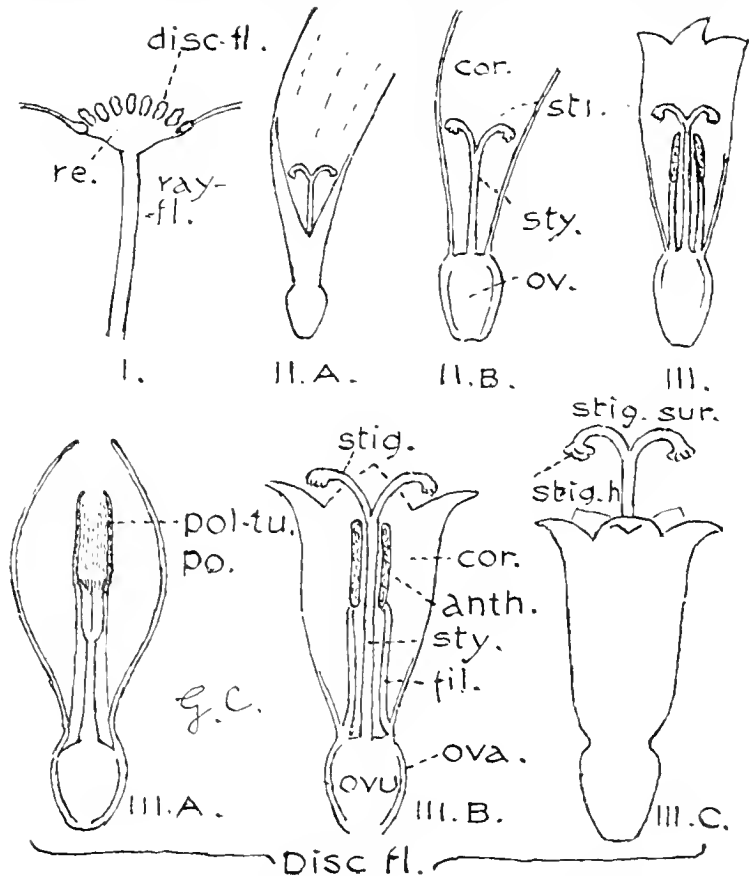


FIG. 87.—RAY AND DISC FLORETS OF THE CHRYSANTHEMUM.

place on record the society's appreciation of his work, and of the valuable and consistent support he gave to the N.C.S. over a long period of years.

Mr. Cragg's paper was exceedingly well received. We make the following extracts:—

RAISING CHRYSANTHEMUM SEEDLINGS.

To secure flower-heads that will produce pollen and be capable of seed production the plants should be grown in a rather poor soil, and only given enough feeding to produce a moderate growth, so that all stems and foliage should be firm and solid without being at all coarse. The withholding of water every now and then, to cause the plants to flag, is a decided help. This treatment, before and while the buds are forming, helps to reduce the fulness of any double. It is of no service after the buds are taken, and the only result then would be to cause the centre of the flower to be formed of florets that would not open. If plants are not grown especially for crossing, the latest flower to open should be chosen on plants that have received no feeding from the time the first floret showed colour. This parsimonious treatment is the first stage in seed production, and a very important stage, too.

(III.). The difference is one of colour and length only, the corolla of the latter being longer and well above the pistil. Each has five petals joined at the sides into a tube or cup, and opening out to five points. The pistils have three parts (III. B.); at the base is the ovary, containing the ovule or embryo seed. Opening from the top is a hollow tube, known as the style. This terminates in the third part, the stigma, which has two arms, at first closed together in a straight line with the style, but later on widely opened like the arms of the letter Y, with the tips curled under. The top of each arm exudes a sticky substance from its loosely made surface, and in this viscid substance the pollen grain may germinate. This top part is known as the stigmatic surface, and has its tip furnished with a bunch of tiny hairs.

Grouped round the pistil are the five stamens, each consisting of two parts. First, the filament, which is a slender, hair-like stem attached to the corolla just above the ovary; then, at the tip of each is the anther, which consists of two pouches containing the pollen. The five anthers are united at their sides (this is a distinguishing mark of the Compositae), and form a tube about

the pistil. At first the latter only reaches to the base of the tube, which is mature first (III. A), but as the pollen bags burst and shed their contents into the tube, the stigmas are pushed up by the lengthening style, and by means of the stigmatic hairs brush the tube clean. The lengthening proceeds until the stigmas are well above the tube and all the pollen has been evacuated, and then, and not till then, the arms unfold (III. B). Nature, by this ingenious device, prevents self-fertilisation, and pollination can only take place by the agency of man or insect. The ray or ligulate flowers (II. A and B) are female only, but each is capable of producing seed, if pollinated by pollen from a disc floret. In a single flower, of course, the disc florets are in the majority, and seed production is simple, but in the doubles they are scarce, and may even be wanting altogether.

Before pollination is effected the bloom to be treated should be prepared, so that the operation may be as simple as possible. This preparation consists, in the doubles, in cutting back the ligule or the corolla bit by bit until the green tip of the pistil is seen. Not all can be treated at one time, and two or three operations are usually necessary. If carried out early enough, which would be just before the ray flowers attain their full size, the stigmas will grow out well beyond the cut edge, and may easily be pollinated. Disc florets of these doubles should be pulled out by tweezers.

Singles, owing to the number of disc florets, should be treated differently. The whole of the eye must be cut down to a sufficient depth to get rid of the pollen tubes, the ray florets only being used for crossing. The anemones are to be treated in the same manner. If the ray florets are long and large, it is just as well to shorten them. The stigmas are ready for pollination when the tips are well turned back and show the hairs at the ends (III. C).

Pollination may be effected under various conditions. The raiser may carefully collect pollen and carry it from one spot to another where it is to be used, or he may place the two plants to be crossed side by side, or proceed by the method that I consider the easiest and the best. This is to prepare the blooms on the plant, and when they are ready, cut them with 2 feet of stem and place them in a deep vase of water in a warm, dry spot, and then pollinate. Each bloom as cut should be correctly labelled, and a dozen or more may be placed in one vase. Perhaps it would be as well to keep those blooms required for pollen separate from the seed-bearers. Having collected some pollen, it is then an easy matter to lift a bloom from the vase and pollinate it.

Pollination is a very simple process, and consists in lifting pollen on some tiny implement and transferring it to the pistil of the desired flower, working it well down into the Y opening, at the same time covering as much as possible of the stigmas. A flattened pin, a brush, or the point of a knife may be used for such transference, but I prefer to use a slightly sharpened safety match, as the rough wood holds the pollen, and a fresh match may be used for each cross. The pollen should be dry and powdery, and if not it should be dried or the operation deferred. It is as well to pollinate as many flowers in one head as the amount of pollen will allow, and it may take two or three days to get enough done. As soon as pollen has been applied, write the particulars of the cross on the label, adding at the same time the date.

(To be concluded.)

SCOTTISH HORTICULTURAL.

MARCH 7.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh. Mr. Pirie, the president, was in the chair, and there was an attendance of 45 members. Mr. J. W. Scarlett, J.P., read a paper entitled "Suggestions for Modifying the Cost of Fruit and Vegetable Distribution." He urged that some understanding should be come to which would prevent the great disparity between the price obtained by the grower and that paid by the consumer. It was the duty of the community to support home industries, and there was no better way of doing this than by making use of home-grown fruit and vegetables. At the

present time Edinburgh was the great vegetable market for Scotland, and prices were controlled by those obtained in the Waverley Market there. Glasgow was a distributing centre, and the Glasgow dealers were obliged to come to Edinburgh to get into touch with the actual growers. But the Waverley Market was very much in the background as a centre, and to encourage producers to do their best a proper up-to-date wholesale market in a suitable centre was necessary. Such a market would require to have good railway facilities, storage accommodation, etc., and he thought that Leith, which had also shipping facilities, would be an ideal centre.

The exhibits were: Violets, from Mr. R. STAWARD, Panshanger, Herts (awarded a Cultural Certificate); Sea Kale and Apple Charles Ross, from Mr. PIRIE (awarded a Cultural Certificate); vegetables and forced Rhubarb, from Mr. SCARLETT (the Rhubarb was awarded a Cultural Certificate); and imported fruits from Messrs. JAS. LINDSAY AND SONS, LTD., Edinburgh.

THE WEATHER.

THE WEATHER IN WEST HERTS.

Week ending April 5.

The driest week since October.—The first day of the week was rather cold, but after that high temperature, for the time of year, as a rule prevailed. On the warmest day the highest reading in the thermometer-screen was 66°—the highest temperature recorded here as yet this year. On the coldest night the exposed thermometer registered 9° of frost. The ground is at the present time 2° colder than is seasonable at both 1 and 2 feet deep. Rain fell on only the last day, and even then the amount deposited was very small, making this the driest week since the second week in October. During the week 2½ gallons of rainwater came through the bare soil percolation-gauge, and 3 gallons through that on which short grass is growing. The sun shone, on an average, for 6 hours 50 minutes a day, which is 2½ hours a day longer than the mean daily duration for the time of year. Light airs and calms alone prevailed during the week. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 6 per cent.

MARCH.

The wettest, coldest, and most sunless March yet recorded here.—This was a very cold month, and more particularly the first ten days of it. On the warmest day the temperature in the thermometer-screen rose to 55°, and on the coldest night the exposed thermometer registered 19° of frost. Both of these extremes are low for the month. Rain or snow fell on as many as 21 days, and to the total depth of 5½ inches, making this the wettest March during the sixty years over which the Berkhamsted rainfall records extend. On the wettest day the total measurement of rain and melted snow amounted to over an inch. This is the wettest day recorded here in March during the thirty years over which my own records at Berkhamsted extend. Snow fell on 16 days, and on one day the ground was covered to the depth of 6 inches—the deepest fall of snow I have yet recorded here in March. The sun shone, on an average, for 2 hours 7 minutes a day, which is 1 hour 28 minutes a day short of the mean daily duration for the month, making this the most sunless March I have yet recorded here. There were as many as 12 days without any sunshine at all. This proved the coldest March I have ever recorded here, and yet will be rendered memorable for many years to come by the destruction wrought on the evening of the 28th on a very large number of fine timber trees in this district by a northerly blizzard of remarkable violence. For altogether 437 hours the direction of the wind was some point between north and east, the average duration in March for those winds being only 197 hours. The mean amount of moisture in the air at 3 o'clock in the afternoon exceeded a seasonable quantity for that hour by 7 per cent.

Our underground water supply.—With March came to an end the winter half of the present drainage year. During those six months the total rainfall amounted to 21½ inches, which is 6½ inches in excess of the average for the previous 59 years. This is equivalent to an excess of 142,958 gallons of rain and melted snow on each acre in this district. At the same time last year there was an excess of 169,665 gallons of rain per acre. E. M.

THE WEATHER IN SCOTLAND.

The hen contributed more than its fair share to our March weather, for cold winds, dull skies, and showers of hail and snow prevailed throughout the month. The amount of sunshine was very meagre in all 87½ hours, being but 24 per cent. of the possible. Rain, hail or snow fell on 18 days, yielding 3.26 inches, the heaviest fall being on the 16th, when 0.96 inch was recorded. The barometer, with a mean of 29.790 inches, varied from 30.235 inches on the 7th to 28.789 inches on the 26th. There was a sudden rise in the temperature towards the end of the month, and on the last day the highest maximum of 53° and the highest minimum of 43° were registered. The lowest maximum of 36° was on the 11th, 12th and 13th, and the lowest minimum of 25° on the 26th. For the month the mean temperature was 37°, with a mean range of 9° and an absolute range of 28°. On 18 days the temperature fell below the freezing point. The grass thermometer gave a mean minimum for the month of 28°,

the lowest being 19° on the 26th; there were 18 days of ground frost. At 1 foot deep the soil temperature, while fluctuating, rose from 35° to 39°. The prevailing winds were from the north-east. James Malloch, Director of Studies, St. Andrews Provincial Training College Gardens, Kirkton of Mains, near Dundee.

GARDENING APPOINTMENTS.

Mr. T. W. Birkinshaw, for the past 2½ years Gardener to Lieut.-Col. HORNSBY-DRAKE, Compton Bassett, Calne, Wiltshire, and previously for 9 years Gardener and Estate Overseer to Sir CHARLES HAMILTON, Bart., Hatley Park, Sandy, as Gardener and Overseer at Caldecote Towers, Bushey Heath, Watford, Hertfordshire.

Mr. J. M. Bryce, as Gardener to B. H. RENDLE, Esq., Cophorne School, Crawley, Sussex.

Mr. C. A. Hanson, for the past 18 months Gardener to Major C. LEVESON GOWER, Titsey Place, Limpsfield, Surrey, and previously for 8 years Gardener to Captain HERBERT WILSON, D.S.O., Ashby Folville Manor, Melton Mowbray, Leicestershire, as Park Keeper to the Normanton Urban District Council, Normanton, Yorkshire.

ANSWERS TO CORRESPONDENTS.

CAULIFLOWERS WITH GRUBS. W. Moir. The grubs in the stems of your Cauliflower plants are those of the Cabbage root fly (Phorbia brassicae). American growers use tarred paper or cards as a preventive measure. The following method of using the cards is taken from the Board of Agriculture's leaflet on this subject: The cards used are six-sided, about 3 inches across, with a slit reaching to the centre, where there is a star-shaped cut to fit closely round any thickness of stem. The cards should be placed round the plants at the time of transplanting or setting out. To place the card in position, bend it slightly to open the slit, then slip it on to the centre, the stem entering the slit, after which spread the card out flat and press the points, formed by the star-shaped cut, round the stem. A tool has been devised to cut these cards so that five to six hundred can be cut in an hour. The card must lie close to the ground, so as to prevent the fly from creeping under to lay her eggs. A cupful of paraffin added to a pailful of sand, and the sand sprinkled once a week round the stems of Cabbages, would act as a deterrent to the flies in their egg-laying. Badly infested plants, including the stumps, should be uprooted and burned so as to keep down the pest. Where the attack has been bad, neither Cabbages nor Beet should immediately follow, nor any Cruciferous crop. Any rotation of crops which may be adopted to evade the pest must be accompanied by the destruction of Cruciferous weeds which play the part of nurseries for the Cabbage maggot.

NAMES OF PLANTS: C. P. 1, Quercus coccifera; -2, Gagea foliosa; 3, Romulea bulbocodium (all sent from Salónica).—C. R., Stroud, Daphne Laureola (Spurge Laurel).—W. T. Cardiff, Cupressus macrocarpa.

VINE LEAVES UNHEALTHY: C. E. F. The trouble is not due to organic disease, but to an unhealthy condition at the roots. Lightly fork the surface of the border, and then apply a mulch of rich manure. This will favour the development of fibrous roots near the surface, where they will be properly aerated.

WOMEN GARDENERS: Mrs. M. and J. C. There are several colleges where women can be trained as gardeners, including the Thatcham Market and Fruit Farm; Horticultural College, Swanley, Kent; University College, Reading; University College, Leeds; Women's Agricultural and Horticultural Union, 45, Queen Anne's Chambers, London, S.W.; School for Lady Gardeners, Glynde, near Lewes. You could also advertise in the horticultural Press for a situation as a beginner in a good garden. With regard to Ireland, there are occasional vacancies for unpaid assistants at the Royal Botanic Gardens, Glasnevin, near Dublin.

Communications Received.—G. M., Ltd.—A. B.—J. S. C. M. B.—W. B. H.—C. E. G.—O. T.—H. M.—G. H. W.—W. M.—C. D.—Bono—J. S.—G. H. H.—G. R.—Subscriber—H. P.—Regular Reader—J. L.—E. J. R.—J. McM.—J. Heal—W. J.—Pte. G. E. 2nd Inf. Brigade, Egypt—Pte. W. R. Warwick Regt., B.E.F.—Gunner Sells, "D" Battery, Salonica.

THE
Gardeners' Chronicle
No. 1529.—SATURDAY, APRIL 15, 1916.

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THE MARKET FRUIT GARDEN.

MARCH was a month of tribulation for all connected with the land; for, although the rainfall was much less than that of February, it was not till the last three days of the month that rain or snow held off for more than two consecutive days. Falls were registered on nineteen days, making a total of 2.74in., a quantity much less than it was in some parts of the country. A few frosts occurred, the most severe being 5 degs. on high ground and 6 degs. on the lower level. The blossom of Black Diamond Plums was about one-tenth out at the time, and a few blooms were showing on Monarch. The atmosphere was dry, and the blossoms did not appear to be damaged at all. More harm was done to their appearance, at least, by the great gale of the night of the 27th and the following morning, which bruised the petals considerably.

LIME SPRAYING.

Spraying with lime was begun in earnest on March 25, and has been continued without much interruption up to the time of writing. A trifling shower fell at the end of the first day, and nearly $\frac{3}{4}$ in. on the night of the 27th. The lime had dried on the trees, however, during an interval of two sunny days, and comparatively little was washed off. Since then there have been ten days without measurable rainfall, so that the lime has had a good chance of hardening. In the course of the week portions of one orchard of Apples have been done with lime and silica, lime and paraffin, lime and salt, and cold limewash to compare with warm. Results will be reported hereafter.

WOMEN AS HOERS.

All available men being engaged in lime-spraying and horse-cultivation, some of the women who are engaged every season as fruit thinners and pickers have been induced to try their hands at hoeing the rows of trees and bushes after the horse-cultivator. As the land after the past wet season is in a tough condition, they find the work hard, and it remains to be seen whether they will be able to "stick it," as the expression is in this district. At present, at 2s. a day, they make an acre cost about 12s., as compared with the 7s. to 9s. piece-work prices paid to men usually, according to the condition of the land. It will be understood that barely one-third of the land is left by the horse-cultivator—called a "shim" in this district—for the hand-hoers to deal with; but, as the work of hoeing closely around each tree and bush takes more time than treating the rest of the space, when there is no horse-cultivation, the hand-hoers have more than one-third of the work to do in an orchard. At present, the women do the work less thoroughly than men, as they are too gentle in their strokes with the hoe; but they keep at it very industriously, and are improving in efficiency.

PLUMS AND PEARS IN BLOSSOM.

Black Diamond Plums were in full blossom on April 5, and Monarch on the following day, while Early Rivers and President showed a few blooms here and there on the 5th. These developments were not strikingly early, although above the average in forwardness, as full blossom in Black Diamonds and Monarchs has been recorded in three or four seasons as having occurred from March 24 to March 31, while that stage has been commonly reached by the middle of April. Several varieties of Pears had more or less expanded bloom on April 5, Thompson's showing most, that variety being ahead of Louise Bonne of Jersey, which should be first among the limited number of varieties grown by me. Beurré Superfin came next to Thompson's in forwardness of flowering. A few bumble bees were seen among the flowering Plums and Pears, but hardly any other insects. My live bees, unfortunately, have all died of the dreadful Isle of Wight disease. They were distributed in different parts of the fruit farm, and when a few new swarms were introduced, these were hived at a good distance from infected spots. But all have succumbed to the malady. This is my "on" year for Plums, as I had very few last season, when most growers had fair or full crops, and there are great shows for all varieties, particularly Czars, Monarchs, Early Rivers, and Black Diamonds. The last-named variety appears to be self-sterile, and there is reason to fear that it will not be well pollinated. The earliest blossomer near it is President, and very few of the flowers of that variety were open when Black Diamond was in full blossom.

BLACK CURRANTS.

This fruit is somewhat backward in development, but has made great headway recently. The bushes are in a much more

vigorous condition than they were a year ago, and seem to promise very favourably.

COB NUTS.

Some time ago it was mentioned that there was an extremely small show of catkins on Cob Nuts in my orchard. The advice of a correspondent of this journal was adopted, portions of boughs of wild nuts bearing catkins being placed on the Cob Nut trees. The portions were small, as there is here a shortness of catkins on wild, as well as on cultivated, Nuts. But, whatever the result of the experiment may be, the crop, it is feared, must prove scanty, because female blossoms have made but very little show.

PRUNING BEHINDHAND.

In consequence of the great loss of time caused by the bad weather, pruning is greatly in arrear. At the present time, so far as Apples are concerned, it is carried on at great disadvantage, because the opening fruit buds are in a tender stage, and get brushed off more or less by the pruner, however careful he may be. If an arm brushes against a fruit bud in its present stage, when reaching about the interior of a tree, the bud is knocked off. A mere touch is enough to do it. There will be less danger of injury when the blossoms are open, and none at all when the fruitlets appear. April is the best of all months for pruning young trees, before they begin to fruit, but not later on, for the reason given.

SPRAYING AND BUD-EATING.

It is difficult to determine to what extent the spraying of Plums with lime-sulphur is to be credited with the lack of any considerable loss from bud-eating by birds. So far as can be judged, there was hardly any damage after the spraying, even where an attack had been begun. But there were fewer bullfinches about than there have been in some seasons, while about ten of them were shot, and the rest were scared frequently by the patrolling of the orchards by the gunner. Also, it is to be observed that the attack began late, and that when the fruit-buds have swollen much birds appear to leave them alone.

FRUIT GROWERS AND MILITARY SERVICE.

In common with other cultivators of the soil, fruit growers have to endure the disadvantage of losing the strongest of their men for service in the Army. So long as only diggers and hoers are taken, patriotism forbids complaint; but when skilled foremen and carters are denied exemption the hardship is very serious. Among the most harsh decisions of Military Tribunals, however, are those which refuse exemption for market gardeners and fruit-growers who hold a few acres of land, doing all their own work throughout a good part of the year, and conveying their produce to a neighbouring town for sale. Many such men, who have been refused exemption, have no course to adopt but that of disposing of their undertakings, no matter at what loss on account of forced sale. *A Southern Grower.*

NEW OR NOTEWORTHY PLANTS.

DENDROBIUM WOLLASTONII.

WE have received from Mr. C. Wright, gardener to the Hon. N. Chas. Rothschild, Ashton Wold, Qundle, a flower of a beautiful new *Dendrobium* (see fig. 88) collected by Mr. Wollaston in New Guinea and now flowering for the first time. It is named *D. Wollastonii*. The plant is of the evergreen section, which includes *D. spectabile*, *D. macrophyllum* (Veitchianum), *D. Johnsoniae*, *D. Madonnæ*, *D. atrovioleaceum* and its close ally, *D. Ashworthiae*, illustrated and described in *Gard. Chron.*, Feb. 9, 1901, p. 86.

D. Wollastonii has a stout inflorescence bearing six or more handsome flowers. The pedicel and ovary are greenish and hairy, the sepals cream-white, hairy at the back and recurved at the tips; the broad white petals are folded back on the lower half, the side lobes of the lip are yellowish, with purple lines, and the front lobe pale sulphur-yellow.

The species was named and described by Mr. H. N. Ridley in an account of Mr. Wollaston's New Guinea collection, now in course of publication by the Linnean Society. The new species, and other members of the group to which it belongs, require to be grown in a moist, warm house, and for preference in teak baskets or pans, that may be suspended from the roof-rafters.

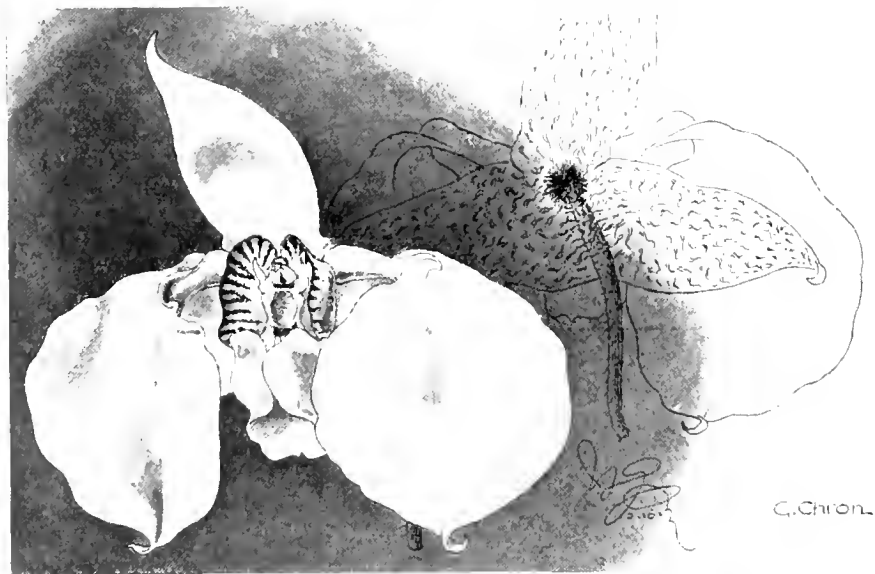


FIG. 88.—*DENDROBIUM WOLLASTONII*, SP. N.

LETTERS FROM THE FRONT.

A VICTORIAN HORTICULTURIST IN EGYPT.

HAVING enlisted in November last, and spent some months training on this fringe of the desert, I have almost lost touch with the progress of the horticultural world. So far as I can ascertain, the cultivation of flowers in Egypt is difficult on account of the intense summer heat. *Cosmos* and *Salvia Bonfire* are as bright during the Egyptian winter as we in Victoria, New South Wales, usually see them in late summer. *Brompton Stocks*, *Ageratum*, *Pansies*, *Verbena erinoides*, *Camias*, and the old-fashioned *Marigolds* are also used for bedding. In the public gardens and street plantings beds of *Tecoma velutina*, *Aimée Vibert Rose*, *Nerium splendens*, and *Poinciana Gillisii* are attempted, usually set off by specimens of *Bougainvillea*, *Phoenix Palms*, *Cupressus*, and the inevitable *Banyan tree*. *Tomatos* are plentiful during the winter at least, the average price being $\frac{1}{2}$ piastre per lb. (a piastre equals 2½ pence);

Oranges cost 1 piastre for three to six, according to size. There are many rumours of our seeing service in France. Wherever we act I hope it will be soon. *Pte. Gilbert Errey, No. 3743, 12th Rfcts. Sth Batt., 2nd Inf. Brigade, A.I.F. Heliopolis, Egypt. March 16, 1916.*

A GARDENER IN THE SALONICA FORCE.

HAVING been away for so long on active service I should like to know how the gardening world is going on. Is the trade suffering much from the loss of skilled men; or, on the contrary, are the seedsmen and nurserymen keeping up the output of new plants, which used to be the backbone of the trade? The following notes on Serbian crops may be interesting:—The main crops in the south are Tobacco and vines, with occasional patches of Maize. Tobacco is grown on the very light, stony soil of the valleys, and seems to be well cultivated, though very little manure is used. Though the flowers are very small, the stalk is often seen over two inches thick, and not at all sappy, which may be accounted for by the poorness of the soil, which is of light sandy loam, made extra porous by the number of stones it contains, with a subsoil of sandstone.

The vines are grown in the more open spots, and seem to be well done in regard to top-dressings of horse, donkey, and cow manures, mixed with sand obtained from the river beds. They are pruned to the last bud, and the spurs seem clean, no scale being found on the old leaves

the summer only lasts long enough to ripen the first crop. Such appear to be the main crops and trees in Serbia, and on the whole the ground seems to answer well to the rough and ready methods of the natives. *Gunner Sells, B/Battery, 54th A.B., 10 Div., Salonica Force.*

IN FRANCE.

I TAKE this opportunity of thanking you for sending me the *Gardeners' Chronicle* for the past twelve months. After I have read it, I hand it round in the trenches and out of them. It is very greatly appreciated, for it keeps the boys in touch with their occupation in times of peace. *4482, Pte. W. Widgery, No. 4 Platoon, A Coy., 2nd Royal Warwickshire Regiment, B.E.F., France.*

NOTICES OF BOOKS.

DAFFODILS.*

As the author of this essay observes, whereas present-day gardeners have striven with energy to improve the *Narcissus*, very little botanical work on the genus has appeared since the publication of Mr. J. G. Baker's *Amargyllideæ* in 1888. This work, we may mention, was preceded in 1869 in the *Gardeners' Chronicle* by the same author's useful "Review of the Genus *Narcissus*." Now Mr. Pugsley offers the public a valuable digest of the geography, history, development under cultivation and synonymy of *N. poeticus* and its allies. He begins by calling attention to the fact that *N. poeticus* is commonly represented in English gardens of the present day by two distinct plants. One, sold as *N. ornatus*, flowering naturally in April, and *N. recurvus*, which never flowers before May. Of these he describes the vegetative and floral differences. He then proceeds to a summary of the older authors' reviews of the Poet's *Narcissi*, beginning with Gerard—1597—and continuing with Parkinson's more elaborate account—1629—and Ray's more strictly botanical description of 1688. Philip Miller (1731) mentions only one, a single-flowered form. In 1793 Curtis divided *N. poeticus* into three species, without fully characterising them. Richard A. Salisbury comes next in chronological order. He described some of the old forms under new names, and some of his excellent drawings, preserved in the British Museum, are reproduced in the plate illustrating the floral characters of the group in Mr. Pugsley's paper. Haworth's classification (1812-1831) is reproduced in detail; the number of "poeticus species" being finally raised to twelve. Dean Herbert (1837) admitted ten "forms" as varieties. Burbidge and Baker's *Narcissus* appeared in 1875, and Peter Barr's *Ye Narcissus or Daffodyl Flowre*, in which F. W. Burbidge collaborated, in 1884. The earlier works are examined and discussed more or less fully. Then follows a summary of the classifications of Continental writers. Mr. Pugsley's own classification comprises nine "plants which appear to be essentially distinct and probably wild." They are: *N. poeticus*, L.; *N. verbanensis*, Pugsley; *N. hellenicus*, Pugsley (new species); *N. recurvus*, Haworth; *N. majalis*, Curtis; *N. radiiflorus*, Salisbury; *N. stellaris*, Haworth; *N. poetarum*, Haworth; and *N. exertus*, Pugsley. Full descriptions of these types are given, together with synonymy and copious references to the literature and figures. Mr. Pugsley's carefully compiled monograph will be of the greatest service and interest to the student of Daffodils. Nothing so exhaustive had previously appeared. An index to all the names would have been welcome, and would have greatly facilitated the use of the monograph.

* *Narcissus poeticus and its Allies*. By H. W. Pugsley, B.A. Issued as a supplement to the *Journal of Botany*, 1915. Pp. 44, with two plates. London: West, Newman & Co. Price 2s. 6d.

SOME OPINIONS ON SPORTING IN FRUIT-TREES.

I SEND a photograph (see fig. 89) of the tree of Black Worcester Pear, to which I referred in *Gardeners' Chronicle*, October 23, 1915, p. 267, as having developed a branch that was apparently a vegetative sport. The branch in question is growing from a little below the branching point of the tree; just above it is some decayed wood. As I stated before, the foliage and fruit of this branch are quite unlike those developed by the rest of the tree; the leaves are more than twice the size of those of Black Worcester, and are nearly circular, whilst the fruit is of a golden colour when ripe, fit for dessert at the end of August, whereas the fruit of Black Worcester is russet-red, fit for stewing from October to February. I thought the branch must be due to a bud sport, but on examining the tree with Mr. Parkinson, lecturer on botany at Wye Agricultural College, we noticed another bud near to where the "stranger" branch had developed, that the main branches were slightly enlarged a foot or two from the point of branching, and that the bark at these points was rougher. We think, therefore, that some 50 years ago the tree may have been re-grafted with Black Worcester, and the branch has come from the bole below the points of re-grafting. I had previously written to several authorities on the subject, who most kindly gave their opinions on this particular case of a much-debated subject.

Mr. George P. Berry, Chief Inspector of Horticulture at the Board of Agriculture, told me of a case in Herefordshire where a number of Devonshire Quarrenden Apple trees were crown grafted with Newton Wonder; one of the trees developed from the scions a blood-red Newton, and scions taken from this branch have retained their character, so that the grower has now a number of young trees of a beautiful red Newton Wonder.

A well-known Kentish nurseryman wrote:—The case you mention of Worcester Pear can, I think, only be accounted for either by the tree having been head worked on, say, White Doyenné, or by the stock having thrown a growth and fruited. It was formerly more the custom to head work standard trees than now, and in old orchards I have noted many so grafted. In our old orchard a russet Apple (Guernsey Pippin) was grafted on an old tree of Hereford Queening, and the latter only revealed itself by giving fruit on a little spur on the main stem.

The Director of Kew Gardens informs me that at Kew is a large grafted Lucumbe Oak, about a century old, which last year produced suckers of common Oak where the grafting was originally done.

Mr. M. A. Taylor, Chief of the Bureau of Plant Industry of the United States Department of Agriculture, informs me that for several years the Department had been collecting evidence regarding the variation which occurs in varieties propagated by budding or grafting. Most of the work, however, has been confined to citrus fruits, where considerable variation due to bud sports or to mutation has been determined to exist. In one variety of Oranges, which has been cultivated in the United States for about a quarter of a century, all of which originated from three trees, there are at the present time thirteen distinct types recognisable which appear to be capable of propagation by buds or scions. In other varieties of fruits supposedly propagated true by budding and by grafting there are an equal number of different types.

Mr. Taylor is of the opinion that the shoot on the Pear tree is due to an adventitious bud arising from the original stock of the tree, or it is possible that the tree may have been double worked, and that the departure which is considered to be a sport or mutation may be simply an adventitious bud from the trunk of a variety which was originally worked on the crown of

the stock. He writes: "I am inclined to believe that this is the case rather than that it is a bud sport or mutation. Very few instances are known where bud sports or mutations appear as adventitious buds on the trunk or main framework branches of trees. In our experience they have been found more apt to appear as independent fruiting spurs or as secondary branches."

This last observation appears of considerable importance in considering the question of "sports." Cecil H. Hooper.

MEDICINAL HERBS.

Soon after the outbreak of hostilities it became abundantly clear that if we were to maintain the supply of drug plants, of which the major part was previously obtained from abroad, we should have to take steps to discover national



FIG. 89.—TREE OF BLACK WORCESTER PEAR BEARING THE "STRANGER" BRANCH BELOW THE SWELLING OF THE TRUNK (see text).

sources of supply, or substitutes. It is necessary to make a systematic estimate of the local sources of supply by urging those interested to cultivate the wild plants that are to be found in this country, in their gardens, and to collect a supply from the wild plants in their native habitats. The wholesale use of herbs during the Middle Ages has been responsible very largely for the present distribution of them, and they are often to be found in or near towns and villages.

The war found our stock of imported drug plants very small, and the Board of Agriculture, instructed by pharmacists, was not slow to recognise this, and to take steps to remedy it. The Board points out (leaflet 288) the value of herbs and possible source of income to be obtained by those able to devote themselves to the collection, cultivation and treatment of herbs. The drug farms

in existence, as will be seen, are too few to cope with the abnormal demand. A Herb Association has been formed, and this will no doubt help to organise efforts and set the new industry upon a systematic basis to secure a proper market and media for supply and demand.

FOREIGN COMPETITION AND NATIVE SOURCES OF SUPPLY.

In the past large quantities of drug plants came from America or the Continent. The former market is open, but the latter, so far as the Central Empires are concerned, is closed, and Russia cannot send us supplies of Henbane. During the Balkan campaign our imports of Belladonna were restricted, and the present hostilities have cut off the Hungarian sources, Croatia and Slavonia. Our Ally, Belgium, can no longer furnish us with Chamomile or Opium Poppy, large quantities of which are used in this country. We obtained from Hungary much of our supplies of Thorn Apple and Belladonna. Digitalis came from Thuringia, and also from Germany we imported Dandelion, Fennel, Thorn Apple, Henbane and Valerian.

Some of these plants have, however, been grown in this country, as, for example, Dill in East Anglia, Valerian in Derbyshire, and Opium Poppies in Lincolnshire. Certain farms in this country grow medicinal herbs; the industry is up-to-date and well organised, being provided with elaborate machinery for drying, crushing and otherwise treating the material in its crude and more final stages.

Hitchin is an important centre of this industry, and other places are Ampthill, Long Melford, Steppingley, Market Deeping, Wisbech, Carshalton, Croydon and Mitcham. Wisbech is noted for the Woad industry, Woad being used as a mordant in indigo dyeing.

Only two British plants are included in the last British *Materia Medica*, but a dozen are in general demand for medicinal purposes. Aconite, formerly obtained from Switzerland, is narcotic, deadly poison, and used in cases of neuralgia, rheumatism, etc. It is valued at 50s. a cwt. Belladonna is worth £10 an acre. This drug is largely used in nervous disorders, for bad eyes, whooping-cough, and a variety of other maladies. Chamomile (*Anthemis nobilis*) fetches from £3 to £4 a cwt. It is used as a tonic and emetic. Once a common plant, it is now rare, but there are three allied common species. Dandelion root is worth 40s. a cwt. It is a tonic and purifier. Foxglove leaves are worth up to £2 a cwt. The plant is used for heart trouble, inflammation and phthisis. Dill water is an old remedy, and much in use to-day. Dill is distilled to form an essential oil, and is worth 30s. to £2 a cwt. Fennel also yields an essential oil, besides being an excellent fish salad. It is worth 25s. to 35s. a cwt. Henbane is a deadly narcotic poison, worth 45s. to £3 a cwt. Kitchen-middens near old houses and ruins generally yield it, with Belladonna and Thorn Apple. It is used as an anodyne for coughs and swollen glands, and to dilate the pupil of the eye. Opium Poppy heads realise 15s. per 1,000. Amongst other purposes, they are used as an opiate for neuralgia. Thorn Apple is worth 40s. a cwt. It is used for asthma, as are also Henbane and Belladonna. Valerian is used as a tonic for nerves and in epilepsy. The foreign supplies have fetched 50s. a cwt.

Although many other herbs are used in this country, some are more in demand or more generally employed than others. Such well-known herbs as Balm, Comfrey, Feverfew, Celandine, Wood Sage, Marsh Mallow, Mugwort, Penny Royal, Rue, Southernwood, Tansy, Wormwood and Yarrow are used in large quantities both by medical men and by herbalists. A score or so of others include Centaury, Coltsfoot, Meadow Sweet, Carrot, Barberry, Bittersweet, Broom, Buck Bean, Burdock, Elder, Figwort, Hemlock,

Horehound, Male Fern, Meadow Saffron, Mullein, Red Poppy, Rose petals and Sweet Flag.

Most herbs can be grown in ordinary well-worked garden or arable soil, like herbaceous plants. The ground should be well dug and kept free from weeds. A light dressing may improve the crop. Certain plants, such as Aconite, need shady, moist conditions; others, as Digitalis, a dry open soil; some prefer chalk, as, for example, Belladonna; whilst Chamomile grows on sandy loam. Herbs for market must be properly dried. Drug farms have special drying sheds and apparatus, but the plants may be dried in the open, or in a glasshouse, or in a shed with racks well ventilated. Dry potting sheds and other conveniences in gardens loaned or adapted for this purpose would provide all the facilities required. The greatest difficulty attends the furnishing of an adequate supply of stock plants, seeds, roots, and rhizomes. But this initial drawback can be surmounted by getting into touch with the Board of Agriculture experts, the Herb Association, or proprietors of drug farms. *A. R. Horwood.*



FIG. 90.—SMALL ROCK-GARDEN AND WATER-POOL IN ALDENHAM HOUSE GARDENS.

MINIATURE ROCKERY AT ALDENHAM HOUSE GARDENS.

THE view in Aldenham House Gardens, Elstree, illustrated in fig. 90, occupies a space of only 11 feet 6 inches frontage by 9 feet in depth. The gardener, Mr. Edwin Beckett, informs us that it was designed to provide an interesting corner in the garden where a shrubbery border formerly terminated; that it fulfils its object is obvious from the illustration. The water-pool was an after-thought, only included last season; it measures 4 feet by 2 feet 6 inches. By means of a service pipe, dripping water serves to keep the little pond furnished, and gives a sense of coolness in the hottest weather. There are many other instances to be seen at Aldenham in which the gardener has skilfully converted somewhat uninteresting spots into bright places that always evoke admiration. We noticed several during a visit to Aldenham last July.

Mr. Beckett, in sending the photograph, states that he was prompted to do so in the hope that the idea might be useful to owners of small gardens anxious to make the most of them at a little cost. On every day in the year some plant or another is interesting and pleasing to the eye. The following is a list of the plants with which the rockery is furnished —

ALPINES: Campanula warleyensis, C. kewensis, C. Stansfieldii, C. W. H. Payne, C. amabilis, C. glomerata acaulis, C. muralis major, Erodium macradenium hybridum, Shortia galacifolia, Haberlea Ferdinandii Coburgii, H. virginialis, H. rhodopensis, Geranium anemoneae-folium, Ramondia pyrenaica, Androsace foliosa, Saxifraga Cotyledon, S. C. pyramidalis, S. cochlearis, S. peltata, S. muscoides, S. longifolia, Arenaria balearica, Linaria aquitriloba, Meconopsis Wallichii, Armeria maritima rosea, Alyssum saxatile fl. pl., A. s. citrinum, Thymus Serpyllum, T. citriodorus argenteus, Phlox subulata G. F. Wilson, Epilobium Dodonaei, Artemisia stelleriana, Sedum anglicum, S. obtusatum, S. sarmentosa, S. spathulifolium, Dianthus alpinus, D. a. albus, D. coronarius, D. deltoideus, D. glaciatus, D. neglectus, D. superbus, Aubrietia Purple King, Leontopodium sibiricum, Sempervivum californicum, Potentilla rupestris, Asclepias incarnata, Anthemis cinerea, Libertia grandiflora, Linum arboreum, L. perenne, Crotula squarrosa, Trollius yunnanensis, Convolvulus sabatius, Heliochrysum orientale, Antennaria tomentosa, Viola lasnacea, V. rupestris, Genothera macrocarpa, Zauschneria californica, Globularia trichosantha, Helichrysum bellidifolium, Asarum europaeum, Digitalis grandiflora, Omphalodes verna, Mimulus Lewisii, Tunica Saxifraga, T. S. alba plena, Penstemon heterophyllus, Antirrhinum Copper King, Gentiana acaulis, Lithospermum prostratum.

SHRUBS: Thuja orientalis aurea nana, T. occidentalis Ellwangeriana aurea, T. o. Little Gem, Sequoia gigantea compacta glauca, Cupressus obtusa tetragona aurea, C. pisifera nana, Taxus baccata

Devastaria pendula var., T. cuspidata, Fabiana imbricata, Romneya trichocalyx, Veronica canterburyensis, V. cupressoides, V. Guthriana, V. Albionii, V. Bidwellii, Helichrysum rosmarinifolium, Wistaria chinensis, Eonymus radicans microphyllus, Cydonia Maulei, Cotoneaster rupestris, Astragalus tragacantha, Berberis stenophylla Iwumi, Olea nummularifolia, Salix alpina, Smilax aspera, Gaultheria nummularioides, Genista horrida, G. sagittalis, Erica polifolia, E. multiflora, Daphne Cneorum major, Oxyocheilus macrocarpus, Cordylus Banksii.

BULBS: Muscari, Chionodoxa, Narcissus, Colchicum, Scilla.

WATER PLANTS: Aponogeton distachyum, Nymphaea Robinsoniana.

THE ALPINE GARDEN.

SAXIFRAGA SANCTA.

THE usual complaint against this otherwise excellent habited plant is that its flowers are too sparse and scattered. Not so here, this year; whether its improved behaviour is due to the abnormal season, or to the fact that, for the first time, we have it established in a bed of practically pure mountain limestone gravel, I cannot say. The dwarf tufted masses are a striking sight at the time of writing, the unusual shade of warm maize-yellow recalling its moisture-loving cousin, *S. aizoides*, of the North Country dales. *Harold Evans, Llanishen, Cardiff.*



FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warton Priory, Yorkshire.

ORCHARD HOUSE.—The earliest cherries and Plums will have finished stoning, and the temperature may be increased to 55° on cold nights and 60° on mild ones. Plenty of moisture should be provided at closing time, when temperatures 75° to 80° for an hour or two, with sun-heat, will do no harm, allowing for a fall gradually to 60° or even 55°. The Pear is sometimes said to be a difficult fruit to set, but if precautions are taken when the trees are in bloom to guard against sudden rises of temperature it will generally set freely enough. If the morning presages a bright, hot day, admit a little air early, gradually increasing it until noon, when it must be reduced by degrees. Keep a little warmth in the water pipes while the trees are in bloom. Much syringing must not be indulged in, but a parched atmosphere must be equally guarded against, as this weakens the flowers and causes the fruits to drop. Attend to disbudding and pinching, and thin the flower-buds where they are placed too thickly. A couple of leaves left where a shoot is removed will assist the roots. Ordinary attention to watering, syringing, ventilation, and the destruction of aphids and other pests, will form the summer routine. The latest trees, such as Plum Cox's Golden Drop, which will bloom under the influence of sun-heat only, should be kept as cool as possible until they come into flower. After that stage, gentle fire-heat, if only for a fortnight, may be resorted to as a means to securing a crop of fruit.

MELONS.—An economical way of making a hot-bed for Melons is to collect a quantity of leaves and add from one-third to one-half of stable manure, turning and mixing during fermentation. To make up a hot-bed that will retain the heat for some time requires a little experience. The great thing is to give the bed just the necessary firmness, but not more. It is also important that the plants be strong and healthy. Later on the seeds may be sown in the beds, but at this early season it is better to raise the plants in a warm pit. One plant is enough for each light, unless the lights are very large, when two will be better. The best soil is a good, sound, rather heavy loam. The firmer the growth, the earlier the plants will fruit, and the better the fruits will set. Melons should be grown in full sun. Never use cold water to damp either the foliage or the bed, and let damping be done only on bright, warm days early in the afternoon. Give a little ventilation early in the day; it hardens the foliage and enables the plants to withstand attacks of red spider. A fresh, sweet, buoyant atmosphere is essential.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellishield Manor, Basingstoke, Hampshire.

BULBS IN THE GRASS.—Note the effect of various kinds of bulbs in the grass, and make plans for planting in the autumn. Bulbs in pots or boxes which have been forced to provide flowers under glass can be planted now. There will be no necessity to divide them, and Daffodils especially do well in this natural state. Most of the commoner varieties may be used, including the old-English double Daffodil, *N. princeps*, *Emperor*, *Golden Spur*, *Empress*, *Sir Watkin*, *Barri conspicuus*, *Autocrat*, *poeticus* and *Grand Monarque* are sure to do well when naturalised, but there is no reason why any of the *Narcissi* should not be used for this purpose. In heavy soils it is well to give the bulbs a little good soil to begin with. Many other bulbs and corms besides Daffodils may be naturalised in the pleasure gardens, including *Crocuses*, *Snowdrops*, *Scillas* and *Grape Hyacinths* (*Muscari*). When there is doubt whether any plant will respond to naturalisation a good plan is to cultivate a small

portion of the ground after removing the grass, plant there the plant in question, and give it the same attention as it would receive in a garden border. When well established, the surface may be turfed over, or some grass seeds sown.

THE MOWING MACHINE.—The lawns will now require cutting at frequent intervals. Before using the machine, the grass should be well swept, especially near gravel walks, to remove loose stones. After sweeping, it will be well to pass the roller over the grass, to press down any smaller stones which may have been missed, and to make the surface firmer and more even for the machine. It will be necessary at first to drop the front rollers so that the knives stand higher from the ground. If the grass is cut regularly, the grass box may be removed as far as the more obscure parts of the garden are concerned. It will then only be necessary to go round with a birch broom and scatter the grass so that it may be withered in the sunshine.

MAGNOLIAS.—Spring flowers are unusually late here this season, owing, no doubt, to the inclemency of March. *Magnolia stellata* is usually in flower by this time, but at present it has only commenced to break away from the sheath which protects the flower-buds. It is a good plant for a position in the rockery. Like most other Magnolias, it takes some time to become established, and on this account its final position should be carefully thought out, so that there will be no need for disturbance after the first planting. *Magnolia conspicua soulangeana* usually flowers here during the first week in May, and is followed very closely by *M. Lennei*; while it is nearly June before we get the flowers of *M. parviflora*.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chipping, Gloucestershire.

DECIDUOUS CALANTHES.—Newly potted Calanthe plants should be arranged in their growing quarters, e.g., a sunny place in the plant-stove, Cucumber, or Melon-house, or any similar structure, for the orthodox Orchid-house is not essential to the successful cultivation of Calanthes. If the soil was sufficiently moist at the time of re-potting, water will not be needed for several weeks; but the house must be kept moist by syringing frequently between the pots, and sprinkling the floor with water whenever it is dry. This practice may be continued throughout the growing season. When the plants begin to grow freely, and the roots are active, water can be given more frequently. In the early stages of growth water must be applied sparingly, or the growing points may turn black through an excess of moisture around their base. As the season and growth advance, Calanthes require an abundance of water at the root, and when the new pseudo-bulbs are formed, alternate waterings with weak liquid manure from cowsheds will be beneficial, particularly if the loam used in potting was of poor quality. Weak soot water may be applied when the flower-spikes begin to develop. Although as a general rule a sunny position is advised for Calanthes, some slight protection from the direct rays of the sun will be necessary, especially during the early stages of growth. Due attention must be paid to ventilation, and when the pseudo-bulbs begin to show signs of maturity, the plants should be allowed full sunshine, and a moderate amount of fresh air. *Calanthe Regneri* is a later flowering sort, and, in consequence, it may be necessary to defer the re-potting a week or two. When ready the plants should be treated as *C. Veitchii*.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady WANTAGE, Lockinge House, Wantage, Berkshire.

VIOLETS. Make preparations for the planting of young Violets that were rooted last autumn. Choose ground that is shaded from bright sunshine, where red-spider will not be likely to attack the plants. If the ground was dug and well manured last autumn dress it with soot; lightly fork the surface and make level with a rake. Plant the single varieties at about 1 foot apart and doubles at 9 inches.

Violets may also be propagated by division of the old plants after flowering, selecting the most promising crowns for the purpose and planting the portions as in the case of runners. Let the roots be well supplied with water, and during warm, sunny weather spray overhead in the afternoons. In the summer hoe the rows frequently, first dusting the ground with soot, as this material will serve as a stimulant and help to keep the foliage free from red-spider.

ERANTHEMUM PULCHELLUM flowers during the dull winter months. It is readily propagated from cuttings, which may be inserted round the sides of 3½-inch pots in a light, sandy compost. Plunge the pots in a hot-bed in the propagating case, and keep them moist and shaded until rooted. When they have made sufficient roots, transfer them singly into 3½-inch pots, and grow them in a warm, moist atmosphere. Place them finally in 6-inch pots in a fairly substantial compost. They require stopping once or twice during the early part of the season to induce a bushy habit.

COLEUS THYRSOIDEUS bears tall spikes of blue flowers all through the winter, and provides a colour which is very scarce at that season. If cuttings are available a batch may now be inserted. They will readily root in an ordinary propagating frame with a little bottom heat. When rooted they must be kept growing steadily in a moist, warm atmosphere. Pinch out the points of the plants when they are about 6 inches high to encourage them to break from the base. About four of the most promising shoots should be retained for flowering. If some of the old plants were potted up as advised in a previous calendar, they will now be growing freely. These plants will carry about five or six spikes, and, if well grown, will attain to a height of 5 or 6 feet. Such plants are most useful for furnishing large groups. Another batch of cuttings struck in the month of June will make useful plants for flowering in small pots.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORMCOTE, Eastwell Park, Kent.

STRAWBERRIES.—Runners that were rooted late last autumn, and wintered either in pots or planted thickly in nursery rows, should be set in their permanent quarters directly the ground is in a suitable condition. Do not trample on heavy, retentive soils when the ground is sodden; rather defer the planting for a few days. Strawberries well repay for good cultivation and liberal treatment. The ground should be trenched deeply, and well manured some time previous to planting. After the soil has settled it should be made firm, and, just before planting the runners, dressed with wood ash mixed with soot, working the materials under the surface with a rake. The soot and ash, if worked around the roots with a trowel in planting, will assist the plants to make clean, healthy growth. The growth of Strawberries varies somewhat according to the variety, and the nature of the soil. A cool, rich loam is an ideal medium for this fruit; thin, gravelly soils must be enriched and improved. If it is intended that the bed should remain for three years the rows should be 30 inches apart and the plants set 24 to 30 inches distant from each other in the rows; in gardens where the Strawberry grows very luxuriantly more liberal distances than these may be allowed. Pot plants should have their roots carefully disentangled, spreading them out evenly; keep the crown of the plant at the surface, and do not bury it. Make the soil firm about the roots, and when the work of planting is finished work a flat hoe through the rows. Plants set now should not be allowed to fruit this season—all flower spikes should be pinched out as they appear. If drying winds prevail before the plants are established place a light mulch of litter along the rows, but do not use a heavy dressing of manure for these young plants.

ESTABLISHED BEDS.—If the rows were cleared of weeds and rubbish and mulched during frosty weather, as recommended on p. 61, the beds will

require but very little attention now beyond hoeing to destroy small weeds. There is a considerable advantage in putting the straw or litter along the rows early in the season; when frost threatens during the time the flowers are expanded the straw may be lightly shaken over the plants in the evening, and unless the frost is exceptionally severe this will save the crop from injury; but it must be removed the next morning. Before placing the straw in position take the opportunity to dress the ground with concentrated manure. Soot dusted around the crowns will materially assist in checking damage by slugs.

APRICOTS.—The Apricot is one of the earliest fruit trees to bloom, and the first to require disbudding, although this operation is not done so severely as in the Peach or Nectarine. It consists, more particularly, in the removal of badly-placed shoots, especially those growing close to the wall, behind the main stems, and all foreright growths. When the trees have furnished the wall space, and are fully developed, pinch the shoots to three or four leaves to form fruiting spurs. Some of the best shoots on young trees that have plenty of space to fill should be trained in for extension, but do not retain gross shoots, which are rarely fruitful. The disbudding should be done gradually, as to remove too much growth at one operation might in cold weather cause a serious check to the tree. Disbud the top part of the tree first, and, after an interval of two or three days, treat the middle part, completing the bottom of the tree after another interval. Do not disbud in very cold weather. Coverings used for protection must not be dispensed with until danger from frost is past, as the small fruits are very susceptible to injury from frost.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wootton Abbey, Banbury, Oxfordshire.

RUNNER BEANS.—Sow Runner Beans in boxes of light soil, as advised for Peas, but place twice as far apart. Place the boxes in a cold frame, and let the seeds germinate slowly. The seedlings should be grown under the coolest conditions consistent with the exclusion of frost from the frames. Seedlings which become drawn in the early stages rarely recover.

DWARF BEANS.—These should also be sown, and treated as advised for Runner Beans.

PEAS.—Sow frequently mid-season Peas in suitable quantities, according to requirements, bearing in mind that it is preferable to sow small quantities frequently than to sow large quantities at longer intervals. Place the seeds in flat, shallow drills in double rows, allowing 6 inches in each direction between the seeds. If the *Quito Content* variety is used an even greater distance is preferable. The space allowed between the double rows should be at least as much as the height of the variety. The *Quito Content* variety is the most profitable for large gardens, providing the necessary facilities exist, but its cultivation is not advisable unless ample space is given to allow the branching growth to develop. In smaller gardens, with limited space, and where shade is objected to, Prize-winner or similar varieties should be grown. Protection should be afforded from mice and birds. Earlier planted batches should be staked immediately it becomes necessary, or the plants may be damaged by wind.

SPINACH.—Continue to sow successive beds of Spinach. At this season, a rich and deeply-cultivated site should be chosen, as this vegetable has a tendency to bolt on poor and shallow soil. Thinning the seedlings to 6 inches apart immediately they are fit to handle will also help to prevent bolting.

VEGETABLE MARROWS.—Seeds to provide plants for the main crop should be sown singly in 5-inch pots filled with rich soil, placed in gentle heat. After germination the seedlings should be gradually hardened and transferred to their fruiting quarters at the earliest opportunity. Seeds may also be sown on a prepared site under handlights well protected at night.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER, 41, Wellington Street, Covent Garden, W.C.**

Editors and Publisher.—Our Correspondents would oblige by delaying in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the **EDITORS, 41, Wellington Street, Covent Garden, London.** Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

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Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, APRIL 17—

Nat. Chrys. Soc. meet. (Lecture by Prof. Frederick Keeble, on "Plant Breeding," with special reference to *Ochrysanthemums*.)

TUESDAY, APRIL 18—

Roy. Hort. Soc. Daffodil Show (2 days). B.G.A. (Leeds Branch) meet.

WEDNESDAY, APRIL 19—

Royal Meteorological Soc. meet.

FRIDAY, APRIL 21—

Good Friday (Bank Holiday).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.1°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. *Thursday, April 13* (10 a.m.). Bar. 29.2; temp. 52.0°. Weather—Cloudy.

SALES FOR THE ENSUING WEEK.

MONDAY—

Alpine and Rock Plants, and beneficial interest in the tenancy of the Nurseries, Baldock Road, Letchworth, by Protheroe and Morris, at 12 (2 days). Hardy Bulbs, Plants and Shrubs, at Protheroe and Morris's Rooms, 67 and 68, Cheapside, E.C.4, at 12.

WEDNESDAY—

Herbaceous Plants, Hardy Bulbs, Roses, and Fruit Trees, at Protheroe and Morris's Rooms, at 12.

The Co-ordination of Experiments and Trials.

The suggestion made last week in these columns by Mr. W. Cuthbertson that the several institutions engaged in conducting trials of and experiments with plants might with advantage co-operate in their work deserves careful consideration. In present circumstances it is often impossible to institute any useful comparison between the results obtained in one place and those obtained elsewhere; and although no amount of "co-ordination" would enable comparisons to be made between yields obtained on different types of soil, yet a preliminary agreement on methods of cultivation and of planning trials would undoubtedly enhance the collective value of the results of such trials. In the case of the Potato, and we may

choose this plant as an example inasmuch as it is next to Wheat the most important food plant grown in this country, a well-considered series of trials carried out by the half-dozen or more leading experiment stations would be bound to result in information useful to gardeners, growers, and general public, and might be a prelude to a much-needed improvement in the average yield obtained in this country. We believe that this average is so low as 5½ tons per acre, and we know, of course, that no gardener would rest content with such a poor return. Making every allowance for the inevitable differences between agricultural and horticultural methods of cultivation it is hardly to be believed that it is not possible to improve it. We need not attempt in this place to go into details with respect to the co-ordination of trials for it is a subject which is engaging the attention of those who conduct the R.H.S. trials at Wisley; but in order to give point to the suggestion it may be observed that in the case of a trial of such a plant as the Potato there is need for a standardisation of practice. The tubers should be procured as soon as possible after lifting; they should be stored under suitable conditions, sprouted for an adequate time in light of proper intensity, and "disbudded" and cut or not cut according to a generally agreed plan. With respect to preparation of the land also there is room for more uniformity than at present obtains; the previous crop, the system of manuring, "quartering" the land so as to cause natural inequalities so far as may be to cancel out, spraying or not spraying, and, not by any means the least important, the continuation of a trial for a second year with a view to confirming the cropping qualities of those that proved best in the preliminary trial—these are some of the points which should, we think, be settled by agreement between those engaged in conducting trials. Were a programme of such a comprehensive trial to be issued in advance it would undoubtedly be possible for the trials officers to obtain much useful assistance from the large growers, whose experience must of necessity be far wider with respect to a particular plant than is that of men whose duties require them to deal with many different kinds of plants.

This is a subject which the officers of the experiment stations are well able to settle among themselves, and we hope that it will be considered by them, and that if co-ordination be found desirable it will be put in practice without undue delay. We have confined ourselves deliberately to one instance; but it will be evident that if this "common trial" system were found useful in the case of the Potato, it would quickly be adopted in the case of other plants as well. It is said that Englishmen do not love coalitions, but under the morbid acid of war old experiences and prejudices are being etched away, and the nation is in a mood for attempting many things which custom or indifference, or prosperity, had prevented it from attempting previously.

STAPELIA DESMETIANA.—This species (see fig. 91) is amongst the finest-flowered and most easily cultivated of the large number in the genus. Given a sunny position in an airy greenhouse and reasonable care in the matter of watering during its period of rest in winter, there are few other plants of a succulent nature which will so readily repay the cultivator for the small amount of attention required. The plant is a stronger grower than most species of *Stapelia*. The stems, which are mostly erect, grow to about 12 inches in height, and are densely hairy and deeply angular, the rudimentary leaves being very short and erect. The flowers are large and handsome. They are produced near the base of the young stems on a short peduncle, usually in 3 to 6, the pedicel of each being about 1 inch long. The calyx varies from ¼ to ½ inch in diameter; the sepals are lanceolate. The illustration in fig. 91 is slightly under natural size, the flowers being usually 5 inches across. The ground colour is dull plum-purple, and there are numerous transverse markings of pale yellow all over the flower, but more pronounced and of a brighter shade near the centre. The whole surface is hairy, there being dense hairs near the tips of the lobes. These hairs are light purple when the flower first opens, but soon change to white. In common with most of the species, the flowers of *S. Desmetiana* on first opening emit a powerful smell, resembling carrion, and this serves as an attraction to flies, particularly the common blue-bottle, which frequently deposits numbers of its eggs on the surface of the flower. In addition to the type, the following two varieties have been described:—*Var. apicalis*, which differs from the type in having the upper part of the corolla-lobes devoid of hairs, and *var. pallida*, a strong-growing form with large flowers, sometimes 6 inches across, the apex and margins of the lobes being purple in colour, the lower part pale greenish-yellow. The latter variety is stated to form masses a yard across in its native habitat. Both the type and varieties have a wide distribution in the coastal and central regions of S. Africa. For figures of other species in this interesting genus see *Gard. Chron.*, August 29, September 5 and 12, 1908.

R.H.S. RED CROSS SALE.—The Royal Horticultural Society's sale of plants, including Orchids, in aid of the funds of the Red Cross Society, will be held at about the end of June in the Vincent Square Hall, Westminster. The Council appeals for contributions of plants, which will be catalogued. It is expected that the sale will extend over two days.

R.H.S. BULB SHOW.—The Royal Horticultural Society will hold a special competitive Daffodil show on Tuesday and Wednesday next in the Vincent Square Hall, Westminster. The schedule embraces six sections and includes fifty-five classes. On the first day, Tuesday, the 18th inst., the Society's Fruit, Floral, and Orchid Committees will meet at noon as usual.

ROYAL BOTANIC GARDENS, EDINBURGH.—The Civil Service Estimates for 1916-17 include the estimated expenditure on the Royal Botanic Gardens and Arboretum, Edinburgh, which is £12,275, against £14,165 for 1915-16, including salaries and wages £2,450, £8,810 for maintenance and repairs, £540 for police and park-keepers, and £500 for furnishings.

ABERDEEN FLOWER SHOW ABANDONED.—For the third consecutive year the committee of the Royal Horticultural Society of Aberdeen has decided not to hold the annual flower show in August next.

THE LATE MR. DREW.—We are informed that trustees have been appointed by the University College, Reading, to administer funds given and accruing to the late Mr. F. G. Drew, on behalf of his wife and family (eight children, all under the age of fifteen years). The trustees consist of the Registrar of the College, Mr. HERBERT SUTTON,

and Miss LUCY ASHCROFT, Professor of Education and Mathematics. Subscriptions have been sent to the trustees by his present and past pupils, and it is thought that many of his old friends would like to send a contribution, which they can rely upon the trustees using to the best possible advantage. Donations may be sent to the Registrar, University College, Reading.

TREATMENT OF TREES DISPLACED BY STORMS.—Trees uprooted by wind may in many instances be set upright again, and will thrive subsequently, provided the roots are not fractured on the side to which the tree is thrown. Trees 120 to 130 years old have been saved in this way. Very long extending branches make the operation more difficult owing to their weight, and it must be a matter of consideration whether these should or should not be shortened at the outset. The next step is to clear away the soil from the part upturned in order to allow the tree to return to its former position or as near to it as possible, because however careful the work may be done the tree will have a tendency to work back. The lifting is effected at first by jacks until the bole reaches an angle that enables the employment of a block tackle worked with an endless chain, which is to be preferred to a winch that requires propping as the work proceeds. Once the tree is upright it may be secured in position by means of wire ropes, the dimensions of the tree indicating the number needed, but never less than three drawing against each other. While the raising of the tree is in progress, guy-ropes should be used to maintain it in the position gained. Fractured roots must be removed and the soil replaced very firmly. A layer of fresh soil about 1 foot in thickness laid over the roots which are intact is of much value, whilst a circular wall of stones arranged a few feet from the bole has a good effect in steadying the tree until new roots form. Trees that are blown from the upright, but not uprooted, are not at all difficult to restore to an upright position by means of the block and tackle recommended above. For small specimens a three-angle guy is sufficient to maintain them in an upright position until they are re-established. If the position is one in which guys, stones, or props would constitute an eyesore, the tree may be effectively stayed by short struts placed close to the base of the stem, and lying almost horizontal, with the end usually resting on the soil, fast against a stone let into the ground and covered by turf. The strut may be kept from slipping by means of a short stob driven vertically into the ground near its further end, to which the strut is secured by a large nail. In most instances one strut is sufficient, but in some cases two placed at differing angles are needed. It may be added that the strut is easier placed in position when the tree is pulled slightly out of the perpendicular and retained there till the stays, etc., are properly finished. Many of the trees that have been overturned or partly overturned by recent gales may be restored by one or other of the means described.

EARLY GRAPES (FROM WORTHING).—The first of the new season's crop of Black Hamburg Grapes grown in the Worthing district were despatched to Covent Garden Market on April 4 from the Rehobeth Nurseries, and were sold by Messrs. PARSONS AND CO. for ten shillings per pound. This price is said to constitute a record for about twenty-five years. The same firm of salesmen also received during the past week the first consignment of Tomatoes for the season from Worthing.

SOWING FOREST TREE SEEDS.—Lord BARNARD, President of the Royal English Arboricultural Society, has communicated to the members the contents of a letter he has received from the President of the Board of Agriculture (the Earl of SELBORNE), asking him to direct their attention to the urgent need for sowing forest tree seeds this year. Lord SELBORNE emphasises the usefulness of even small sowings, and furnishes a list of the species likely to be in most de-

mand after the war. This list is as follows: Larch, Common Spruce, Sitka Spruce, Scots Pine, Douglas Fir, Silver Fir, Corsican Pine, and Beech.

A CURE FOR HAY-FEVER.—It is stated by the *Journal of the American Medical Association* (March 4, 1916) that hay-fever patients taking not less than 3 gms. of calcium chloride daily, even for a short time, are

sation of the crystalline salt; therefore 50 gms. of the anhydrous is used in place of the 100 gms. of crystalline salt.

WAR ITEMS.—Mr. JOHN BLACKADDER, of the Royal Scots Regiment, has been killed in action. He was the son of Mr. JOHN BLACKADDER, forester at Mortoun Estate, St. Boswell's, Berwickshire, where he was engaged as under-forester.

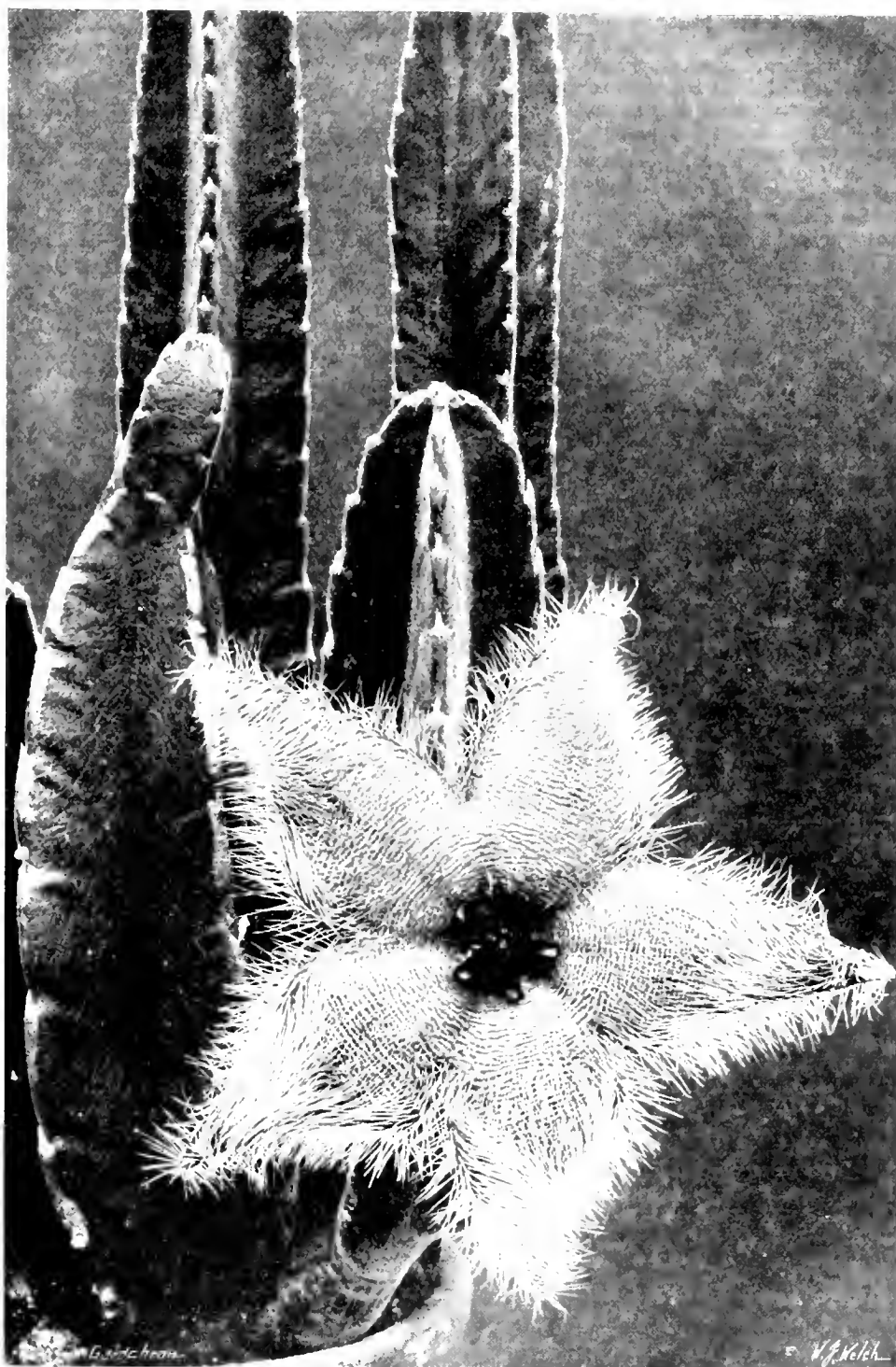


FIG. 91. STAPPIA DESMELIANA: FLOWERS PLUM-PURPLE, WITH PALE YELLOW MARKINGS. (See p. 210.)

practically relieved from all hay-fever symptoms. The chloride may be taken in doses of 3 gms. daily for an indefinite time without any apparent injury. The salt is prescribed in simple aqueous solution thus:—Calcium chloride, crystals, 100 gms.; distilled water to 500 c.c. The dose of this is one teaspoonful in water during or after each meal. If the anhydrous salt is used, allowance is made for the six molecules of water of crystalli-

HYBRID BOUGAINVILLEA.—The *Revue Horticole* for March 16 describes a new hybrid Bougainvillea, which is said to be the result of an accidental cross between *B. spectabilis* var. *lateritia* and *B. glabra*. The cross is described by Dr. G. V. PEREZ, Saint Ursula, Tenerife, who states that his plant of *B. s. lateritia* is growing in proximity to one of *B. glabra*. The first-named species has lately produced seeds, which gave rise

plants with foliage of a glabrous nature, the bracts of which were of the dark magenta colour of those of *B. speciosa* or *B. spectabilis*.

TRADE WITH AUSTRALIA.—From the *Board of Trade Journal* we learn that a Sydney firm of iron and steel merchants and agents desires to be placed in communication with United Kingdom manufacturers of small agricultural tools, such as shovels and forks (reference No. 119, C.I.B. 15,191); also the Melbourne Office of H.M. Trade Commissioner for Australia reports that a Melbourne firm desires to secure the agencies of United Kingdom manufacturers of edge and garden tools and lawn mowers (reference No. 121, C.I.B. 11,754). United Kingdom manufacturers of the goods mentioned desirous of appointing agents in Australia may obtain the names and addresses of the respective enquirers on application to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C. In making application the relative reference number should be quoted.

PUBLICATIONS RECEIVED.—*Guide to the Income Tax.* By F. B. Leeming. (London: Effingham Wilson, 54, Threadneedle Street.) Price 2s. 6d. net.—Bulletin No. 368, United States Department of Agriculture, *Brown-rot of Prunes and Cherries in the Pacific North-West.*—*Women and the Land.* By Viscountess Wolseley. (London: Chatto & Windus.) Price 5s. net.—*The Improvement of the Feeding Value of Swedes and Turnips.* By W. Robb and R. Wishart, St. Andrews, University of St. Andrews, Agricultural Department.

THE ROSARY.

THE ROSE PROSPECT.

If appearances were an indication, probably the Rose prospect for the coming season were not within the memory of the oldest inhabitant, on April 1, ever darker than this season. This must be true also of England and Scotland, judging by the latest telegrams of storms, snow, and blizzards. Looking over my limited collection of Teas, Hybrid Teas, and Hybrid Perpetuals—single Roses included—this morning, they look as if they had been immersed for a short time in boiling water. Of course, I allude to the new growths, some of which had even incipient flower-buds formed, and most of them from one to three inches long. January was the mildest here for forty years, and it was during that month these growths were produced. About mid-February the wind veered to the north, and it has kept between that point and the east persistently since. On February 21 there was 17° Fahr. of frost—most unusual in Ireland—and the glowing promise of January was not merely nipped, but scorched brown or black. April promises mildly, and growth will probably recommence. My chief object in writing you is to ask the advice of your Rose expert readers as to pruning. I assume all badly burned growths had better be removed, and would it not be better also to prune hard back to the first promising growth bud? W. J. Murphy, Clonmel.

UNUSUAL METHODS OF TRAINING ROSES.

WHEN visiting one of the Paris exhibitions I saw some original methods adopted in training Roses growing in tubs. The Roses were of the Climbing Noisette and Tea-scented class, and had been placed in tubs and pots undoubtedly a year previously for the special occasion of the exhibition.

Instead of the usual pyramidal type of training the grower had twined the growths in a serpentine fashion around three or four stakes stuck in the pot or tub, the object being to induce lateral growth and blossom quite low down. It is well known that the Climbing Teas and Hybrid Teas grown erect have a tendency to

flower only about half-way up and to the summit of the plant, presenting a rather gawky specimen, but by twining the growths as mentioned above laterals break out quite close to the top of pots and tubs, and the second year abundant crops of blossoms result.

This system might well be practised in the open garden, where well-flowered pillars of these delightful Climbing Hybrid Teas and Teas are desired. It is not everyone that can afford wall space for such Roses, and to plant them as pillars does not do them justice, for their growth is too vigorous; but by checking the growth as described we obtain a thicker plant and at the same time more blossoms within closer view.

Another uncommon method of treating some of the vigorous Roses, such as Madame Wagram, Lady Waterlow, Johanna Sebus, etc., is to train two growths in a V-shape. The Roses flower abundantly thus trained, and new growths arise from the base to take the place of the flowering-shoots, which, after their first blossoming, may be discarded.

The advantages of this method of training are that the oblique position induces the lower eyes to break, and there is an abundant blossom, although the plant is not dense.

Another method of training Roses is upon espalier wires, as fruit trees are trained. I remember seeing a very large plant of Captain Christy so trained, and I can imagine the usefulness of this plan if adopted with many other Roses. A half standard of Rêve d'Or came under my notice on another occasion. This time the long growths were trained upon two horizontal wires. All who know this Rose and its tendency to make wood rather than blossom will understand how such a method of training must encourage flowers, and, given mild winters, such growths will yield abundant laterals, followed by plentiful crops of blossoms. *Experience.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

BRUSSELS SPROUTS (see pp. 174 and 188).

I have grown Brussels Sprout Dwarf Gem somewhat extensively for several seasons, and so well does it succeed with me that were I restricted to only one sort for supplying firm, not over-large, sprouts of the best quality I should choose this variety. At one time I grew large quantities of May's Northern Prize, a good variety producing rather small but solid sprouts. These sprouts, as is the case with Dwarf Gem, kept firm and good for several weeks after other varieties were finished. Paragon was also a favourite with me, and I grew it for several years. I grow Exhibition, the Wroxton, and Market Favourite for supplying sprouts of larger size. As regards the time of sowing the seed it may be preferable in some parts to raise the plants under glass, but in favourable localities I do not think it necessary. I have for many years sown twice, first at the end of March or the beginning of April and again three weeks later. The ground should be rather firm. The only failure that I ever experienced was soon after I took charge at Mere-worth Castle. I raised a capital batch of plants (early, under glass), nursed them up, and planted them on an old Asparagus bed freshly dug. The plants grew and grew, but never produced a firm button. H. Markham, Wroxham Park.

— *Practical* (see p. 174) makes suggestions on the cultivation of Brussels Sprouts which I have found neither practical nor economical. He says "sow early in March in a gentle heat." But why sow so early if they are to follow summer or autumn Cauliflower? Brussels Sprouts pricked out in 2 inches of soil with 2 inches of decayed manure underneath, and retained in the frame until Cauliflowers were finished—say, in August or September would hardly need staking. What would be more unsightly than a brake of Brussels Sprouts supported with

"stout stakes"? Again, who nowadays has time to syringe Brussels Sprouts? What I do is to sow Brussels Sprouts in March, as suggested, at the same time as the Cauliflowers, plant alternate rows of Cauliflowers and Sprouts, 2 feet by 1 foot 6 inches, and pull up the Cauliflowers when ready. This gives plenty of time to the Sprouts, room to pull them in winter, and a free circulation of air. The variety which has done best with me is Solidity. It is not too tall, and I have never known it to fall over. It is well furnished with good, hard Sprouts, useful alike for market and for the private garden. *Ayrshire.*

CANTELOUP MELONS (see pp. 181, 202).—Mr. P. Aquatias states that the largest fruit of Canteloup Melon he saw weighed 13 lbs. 10 ozs. In the Brussels Market such specimens are not uncommon. I remember seeing several Canteloups weighing over 10 kilos (viz., 22 to 25 lbs.). These were grown (during the hot summer of 1911, I believe) by Messrs Sohie, nurserymen, of Hoeylaert, near Brussels. Dr. Durham mentions his preference for Canteloup varieties. All Belgian growers would certainly agree with him, as they could not sell the ordinary English varieties. They grow a few Noir des Carnes, but prefer the larger Canteloups, of which they crop one fruit per plant. The plants are kept running on the ground in freshly-planted vineries, without any bottom heat, and often without other heating. The cultivation of Canteloup Melons had been extending in Belgium before the war, but it was generally accepted that for house cultivation a Tomato crop sold at ordinary prices was more remunerative than Melons. H. Van O.

NOSEGAY PELARGONIUMS (see pp. 175 and 188).—Your correspondents, R. P. Brotherston and W. T., revive old memories when referring to Nosegay, Tricolor and Bronze Pelargoniums. The Nosegay Geranium or Pelargoniums were first raised by Donald Beaton, gardener at Shrubland Park, near Ipswich. This must have been in the late fifties or early sixties of the last century. Hitherto I have found no date for Stella, but Stella variegata received a certificate from the R.H.S. in 1863, and the strain enjoyed a great vogue from that time till Wellington received a First-class Certificate in 1871. During that period no less than thirty First-class and four Second-class Certificates were awarded by the R.H.S. Stella variegata was raised by Peter Grieve, the father of the Golden and Silver Tricolors, and put into commerce by a nurseryman named Smith, William Paul, of Waltham Cross, first took up the strain originated by Donald Beaton, and he found some difficulty in placing them before the public on account of the antipathy of the florists' faction. When told that the florist would never recognise the Stella race of Pelargoniums, Donald Beaton replied: "Never mind; let me get novelty of colour, compactness of habit, freedom of flowering, flowers that will stand the sun and rain; the public will appreciate their qualities, and I will improve the form afterwards." Owing to the shortness and uncertainties of life he never realised his intentions. Nevertheless the improvement went on, and during the period 1863-71 at least ten firms of nurserymen and private gardeners were engaged raising and distributing this particular race, including William Paul, E. G. Henderson and Sons, Downie, Laird and Laing (Forest Hill and Edinburgh), Bell and Thorpe and Charles Turner. I have always been of the opinion that the Nosegay race was raised from *P. zonale*, judging from the long, narrow petals of the flowers, their light colours, and the zoned leaves. Peter Grieve was also of this opinion, but made the remark that "Fothergillii" may possibly be the earliest of this section." This was already an old plant in 1824, and was generally known as the Nosegay Geranium and *Cicinnium Fothergillii*, but its origin was then unknown. I reckon it was a hybrid between *P. zonale* and *P. inquinans*, on account of its orange-scarlet flowers (inclining to purple in a variety of it), zoned, hairy leaves and glandular peduncles and pedicels. The colour of the flowers, hairy leaves, and glands on the flower-stalks are attributes of *P. inquinans*; zoned

leaves, long, narrow petals and large trusses of *P. zonale*. It must not be supposed that they lost popularity after 1871, for many of them were grown under names from which the title Nosegay was dropped. Christine had a First-class Certificate in 1886 as a Nosegay variety, but Master Christine had this honour in 1870, and again in 1874 as a Zonal. This is the one upon which I lavished my affections as a bedder when summer flower bedding was in full swing. It was a bright pink, with a profusion of large flowers, in immense trusses, and for a short time the beds were worth a long journey to look at. But, alas! the flowers were self-fertilising, and entailed a good deal of labour in cutting away the fruiting trusses, which seemed as if every flower had set seed. Other varieties of the strain had variegated leaves, and I saw one of them as recently as last year still used as a bedder, though it was old and its origin lost, apparently, forty-eight years ago. The high prices for Golden and Silver Tricolors, mentioned by *H. T.*, p. 188, were due to the vogue they enjoyed and the difficulty of propagating them fast enough to meet the demand. I tried quite a number of them as bedders, but not one of them was equal to Mrs. Pollock; and all the old plants had to be preserved as well as the few cuttings obtainable. They were of very slow growth, owing to the great reduction of chlorophyll in the leaves, especially in Silver Tricolors, like *Italia Unita*. The best results from this class were obtained by growing them in large pans, and training them as slightly domed specimens for exhibition purposes. Shortly before the exhibition all the old leaves were removed, when the mosaics formed by the brightly-coloured young leaves were really superb. The double-flowered Ivy-leaved Pelargoniums made their debut in 1878, and between that year and 1885 ten of them had received First-class Certificates. Lemoine of Nancy was the first and principal raiser of Pelargoniums of this type during that period. *J. F.*

SOCIETIES.

ROYAL HORTICULTURAL.

APRIL 11.—The exhibition on Tuesday last in the Vincent Square Hall, Westminster, was sufficient almost to fill the large building, and there was a good attendance.

The Orchid Committee recommended one First-Class Certificate and four Awards of Merit to novelties, and five medals for groups.

Only one new plant received the Award of Merit in the Floral Section, but the Floral Committee awarded sixteen medals for collections.

The Fruit and Vegetable Committee made one award, a Silver Medal, for fruits of *Eriobotrya japonica* (Loquat).

At the 3 o'clock meeting in the Lecture Room, Mr. E. M. HOLMES delivered an address on "The Growing of Medicinal Herbs and Plants in Great Britain."

Floral Committee.

Present: Messrs. H. B. May (chairman), W. J. Bean, Geo. Harrow, A. J. Jackman, R. Hooper Pearson, T. Stevenson, J. Heal, C. R. Fielder, J. W. Barr, B. Crisp, W. H. Page, J. Jennings, W. Howe, H. J. Jones, J. Dickson, C. Dixon, C. E. Pearson, A. Turner, C. E. Shea, H. Cowley, W. P. Thomson, W. Cuthbertson, E. H. Jenkins, G. Paul, W. G. Baker, G. Reuther, S. Morris, and James Hudson.

AWARD OF MERIT.

Primula Zuleika Dobson (see fig. 92).—A hybrid of the viscosa type, with large, purplish-lavender flowers with conspicuous white eye. The parents are *P. viscosa* and a variety of Show Auricula. The largest pip measured 1½ inch across. The truss was of gargantuan proportions, compared to the small compact tuft of leaves, which latter bear a close resemblance to those of a border Auricula. Shown by Mr. CLARENCE ELLIOTT.

GROUPS.

The following medals were awarded for collections:—*Silver-Gilt Banksian Medal* to Messrs. J. CHEAL AND SONS, Crawley, for a group of forced

flowering shrubs. The centre of this very fine exhibit was composed of flowering Cherries, including a pendulous variety of *Prunus serrulata*. The pink blossoms were effectively raised above a white carpet of *Spiraea arguta multiflora*. Here and there in the group were standard specimens of *Cytisus* and Japanese Maples, and banks of flowering Crabs, *Viburnum plicatum*, *Cytisus Dallimorei*, Rhododendrons, and Azaleas. *Silver Flora Medals* to Messrs. SUTTON AND SONS, Reading, for a large table of Cinerarias staged in batches of colours amidst a setting of Ferns. The varieties included the large-flowered Antique Rose and Feltham Blue. Star varieties of a good strain were also included in the collection. Messrs. FELTON AND SON, Hanover Square, London, for a florist's exhibit of Orchids

viscosa were a feature, including one with double flowers of purplish-magenta colour. Mr. G. REUTHE, Keston, Kent, for Alpines and flowering shrubs. Messrs. WATERER SONS AND CRISP, LTD., Twyford, for hardy flowers and Alpines on a rockery; Iris *Susiana*, *Omphrodotes cappadocica*, *Daphne Fioniana*, and *Primula Juliae* were all shown well. R.H.S. GARDENS, Wisley, for pans of Alpines, *Saxifraga Griesbachii*, *Androsace pyrenaica*, *A. carnea alba*, *A. Laggeri* (pink), and *Sanguinaria canadensis*. *Bronze Flora Medals* to Messrs. ALLWOOD BROS., Wivelsheld, for Perpetual-flowering Carnations; Mr. JAMES DOUGLAS, Edenside, Great Bookham, for Show and Alpine Auriculas; Messrs. G. JACKMAN AND SON, Woking, for hardy flowers and Alpines; Messrs. WHITELEGG AND PAGE, Chislehurst, for hardy



FIG. 92.—PRIMULA ZULEIKA DOBSON.

(See Awards by the Floral Committee.)

and Roses, demonstrating the value of *Cymbidiums*, *Odontoglossums* and *Odontiodas* for indoor decorations. *Silver Banksian Medals* to Messrs. B. R. CANT AND SONS, Colchester, for Roses. In boxes along the front were specimen blooms of *Pharisäer*, Augustus Hartmann, Edward Mawley, Richmond, Capt. Cant, a new variety of cerise-pink colour and of beautiful form, and others. At the back were tall evergreen of blooms, including cluster varieties. Messrs. W. CUTBUSH AND SON, Highgate, for Carnations, Alpines, and forced shrubs. The last included well-flowered specimens of *Boronia megastigma*, and showy Rhododendrons and Azaleas. Messrs. STUART LOW AND CO., Enfield, for Carnations and Acacias; Messrs. H. B. MAY AND SONS, Edmonton, for Cinerarias, Clematis, and *Hippeastrums*, interspersed with hardy exotic Ferns. Messrs. J. PIPER AND SONS, Bayswater, for Alpines and small shrubs. Varieties of *Primula*

flowers. *Bronze Banksian Medal* to Messrs. BAKERS, Codsall, for hardy plants.

Orchid Committee.

Present: Mr. J. Gurney Fowler (in the chair), and Messrs. Jas. O'Brien (hon. secretary), Sir Jeremiah Colman, Bart, Sir Harry J. Veitch, R. A. Rolfe, J. Wilson Potter, R. G. Thwaites, Pantia Ralli, F. M. Ogilvie, E. R. Ashton, T. Armstrong, W. Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, H. G. Alexander, A. Dye, W. H. White, S. W. Flory, C. J. Lucas, Gurney Wilson, and R. Broonan-White.

AWARDS.

FIRST-CLASS CERTIFICATE.

Laelio-Cattleya Britannia, *Blancheim* variety (*L.-C. Canhamiana alba* × *C. Warscewiczii* Frau *Mélanie Beyrodt*), from His Grace the DUKE OF

MARLBOROUGH, Blenheim Palace, Woodstock (Orchid grower Mr. Smith). A beautiful hybrid, preserving the albino characters of the parents in its sepals and petals, which are pure white. The lip, which is broad and well-formed, partakes of the *C. Warszewiczii* type. It is violet-purple in front, with a narrow white margin and yellow disc. The flowers are nearly 8 inches across, and there were three on the spike.

AWARDS OF MERIT.

Odontoglossum illustrissimum Shrubbery variety (*Lambcauianum* × *ardentissimum*), from F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth). A remarkable form of large size and perfect shape. The flowers are a rich, bronzy-claret, tipped with blush-white. The lip is white, with dark purple markings in front of the yellow crest.

Odontioda Joan Bryndir variety (*Oda. Charlesworthii* × *Odm. ardentissimum*), from Dr. MIGUEL LACROZE, Rochampton. The forms of this hybrid vary in tint from rose to scarlet, with a yellow ground, as in Fowler's variety, illustrated in the *Gardeners' Chronicle*, March 11, 1916, p. 149. The variety now shown was of good form and of a bright magenta-rose colour, with a scarlet shade, the crest of the lip being yellow.

Cypripedium William Lloyd var. *Negro*. (*belatulum* × *Suanianum*), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. One of the darkest of the *Cypripediums*, and in every respect a remarkable form. The flowers were of thick texture and shining surface, the colour blackish-maroon. A rose shade appeared on the upper part of the dorsal sepal, which had a blush-white tip.

Odontioda Prince Albert (*Oda. Zephyr* × *Odm. percultum*), from Messrs. FLORY AND BLACK, Orchid Nursery, Slough. The flowers were equal in form to the best *Odontoglossum crispum*, and showed some success in the aim of the hybridist to place on it the rich red of the *Cochlioda*. *Oda. Zephyr* (*C. Noezliana* × *O. Wilkeanum*) has never been a favourite, although it occasionally produces a good form, and now proves to be a good parent. The *O. Pescatorei* influence obtained through *O. ardentissimum* in *O. percultum* tends, as usual, to give good shape. The flowers are Indian-red with a rose tint, and the lip is mottled with rose colour.

PRELIMINARY COMMENDATION

to *Odontoglossum crispum* Général Pétain. A superb variety, raised by Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, and flowering for the first time. The small seedling bore a large white flower, beautifully blotched with reddish-purple.

OTHER EXHIBITS.

J. GURNEY FOWLER, Esq., Brackenhurst, Pembury, sent his new *Cymbidium* Niobe (*eburneolowianum* × *tigrinum*), with the dwarf habit of *C. tigrinum*. The plant bore two spikes of pretty flowers, with greenish sepals and petals, and a white lip with a band of small pink spots in front. Also *Odontoglossum Cloth of Gold* (*Amabile* × *Wilkeanum*), a very distinct and beautiful hybrid.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier), showed a selection of rare Orchids, including *Polystachya paniculata*, with three spikes of reddish flowers, *Eria ferruginea*, *Coelogyne lactea*, and *Leachia-Cattleya Isabel Sander* var. This variety bears pretty white flowers with a broad, light-purple front to the lip.

F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), showed two finely-flowered plants of the violet-spotted *Odontoglossum Pescatorei* Duchess of Westminster, which gained an Award of Merit in 1898.

Dr. MIGUEL LACROZE, Bryndir, Rochampton Lane (gr. Mr. Cresswell), sent *Odontoglossum crispum*, *negrescens*, white with very dark blotches, *O. Clotilde Bryndir* variety, and *Odontioda Buenos Aires* (*Oda. Bradshawia* × *Odm. Aireworthii*), of good form and bright colour.

R. G. THWAITES, Esq., Streatham (gr. Mr. Hannington), showed *Odontoglossum luminosum*

(*Fascinator* × *ardentissimum*) and *O. crispum* Perfection, both finely marked.

C. INGRAM, Esq., Elstead House, Godalming, sent *Dendrobium Melpomene* Elstead variety and *Odontioda Rosalie* (*C. Noezliana* × *Oda. Thwaitesii*) of rich red colour.

Messrs. CHARLESWORTH AND Co., Haywards Heath, were awarded a Silver Flora Medal for a group of choice Orchids. Among the hybrids the best novelty was *Sophras-Laelio-Cattleya Meuse* (*S.-L.-C. Marathon* × *L.-C. Callistoglossa*), of good shape and colour; sepals and petals lilac-rose with darker tips and veining; lip magenta-crimson with yellow disc.

Messrs. J. CYPHER AND SONS, Cheltenham, were awarded a Silver Flora Medal for an effective group, in which were interesting *Masdevallias*, including the best large form of *M. Veitchiana grandiflora* and *M. Gargantua*. Among the *Cypripediums* was a fine specimen of *C. aureum virginale*, with nine flowers, all of which had been open since December, 1915, a striking example of the durability of these blooms.

Messrs. J. AND A. McBEAN, Cooksbridge, secured a Silver Flora Medal for a good group of *Cymbidiums*, *Odontoglossums*, *Odontiodas*, and other Orchids.

Messrs. SANDER AND SONS, St. Albans, were awarded a Silver Banksian Medal for a varied and interesting group, in the centre of which was the fine plant of *Lycaste Skinneri* Mrs. G. Hamilton-Smith, which secured an Award of Merit at the last meeting.

Messrs. HASSALL AND Co., Southgate, were awarded a Silver Banksian Medal for a group of fine forms of *Cattleya Schröderae*, with *Odontiodas* and *Odontoglossums*.

Messrs. FLORY AND BLACK, Slough, showed a fine seedling *Odontoglossum crispum*, *Dendrobium Thwaitesiae* Veitch's variety, and *D. chesingtonense* of fine shape.

Mr. HARRY DIXON, Spencer Park, Wandsworth Common, staged a small group of showy Orchids.

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed a selection of their handsome *Odontoglossums* flowering for the first time.

Mr. C. F. WATERS, Balcombe, staged fine forms of typical *Odontoglossum crispum*.

Messrs. STUART LOW AND Co., staged a group of good species, including several *Vanda coerulea*, *V. Parishii* Marriottiana, *Aerides cylindricum*, and some hybrids.

Narcissus Committee.

Present: Messrs. E. A. Bowles (chairman), W. F. M. Copeland, G. Reuthe, F. Barchard, G. W. Leak, F. Herbert Chapman, W. Poupert, A. M. Wilson, H. Smith, J. Jacob, R. W. Wallace, and Chas. H. Curtis.

AWARDS OF MERIT

Narcissus Ozan (for show).—A bicolor variety of excellent form; the perianth is cream coloured and trumpet pale yellow, fading with age to pale lemon colour. The stiff, tall stems suggest a very robust habit.

N. Paleruo (for show).—The chief beauty of this fine *Barrii* variety lies in the magnificent orange-red corona, which measures more than an inch across. The perianth is pale sulphur colour. Both shown by Mr. ALEX. M. WILSON.

N. Double Sir Watkin (for exhibition).—One of the finest of the double Daffodils, and stated to be a sport from Sir Watkin. Some of the segments are a clear yellow, and intermixed with these are others of a deeper shade, apparently derived from the trumpet of Sir Watkin, as the colour is similar. The variety possesses much merit for garden decoration, as the rosette-like blooms are large, of good form, and have tall, stiff stems. Shown by Messrs. R. H. BATH, LTD.

N. Poetry.—The small nodding blooms have a clear white perianth, of regular shape, and lemon-yellow corona that measures $\frac{3}{4}$ inch across the mouth. The award was recommended for the plant's suitability for the rock-garden. Shown by Mr. F. BARCHARD.

GROUPS.

The following medals were awarded for collections:—*Silver-Gilt Flora Medals* to Messrs. BARR AND SONS, King Street, Covent Garden, for

Daffodils. Amongst numerous new varieties we noticed a very large Trumpet variety named Anzac, with massive, well-formed trumpet of rich yellow; Lord French is another fine novelty of this class, whilst The King, and Latona have trumpets of butter-yellow and lemon-yellow respectively. Messrs. R. H. BATH, LTD., Wisbech for bowls of Tulips; and Mr. A. M. WILSON, Bridgwater, for Daffodils, who showed splendid blooms of *Crocus*, Midos, Cranbourne, a remarkably fine Trumpet variety, Conqueror, Beradino, Volvic, and Mistral, a white giant *Leedsii* variety. *Silver-Gilt Banksian Medals* to Messrs. R. AND G. CUTHBERT, Southgate, for Tulips; and Messrs. SUTTON AND SONS, Reading, for Tulips. *Silver Flora Medals* to Messrs. R. H. BATH, LTD., for Daffodils; and Messrs. H. CHAPMAN, LTD., Rye, for Daffodils, the group consisting mainly of seedlings shown under pedigree numbers.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (vice-chairman), W. Bates, E. Beckett, T. Coomber, F. G. Treseder, A. R. Allan, E. Harriss, A. Bullock, P. D. Tuckett, E. A. Bunyard, and Owen Thomas.

A few dishes of Apples and fruits of *Eriobotrya japonica*, the Loquat, the latter shown by Mrs. FARNHAM, The Heights, Witley, Surrey, were the only exhibits in this section. A Cultural Commendation was awarded the exhibitor of the Loquat fruits.

SCOTTISH HORTICULTURAL.

APRIL 4.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date, Mr. Pirie, the president, being in the chair.

Mr. G. W. AVERY, of the Edinburgh and East of Scotland College of Agriculture, gave a lecture on "The Honey Bee: Its Life-history and Anatomy, with special reference to the Organs adapted for use in Cross-pollinating Flowers," with lantern illustrations. A description of the queen, drone, and worker bees, and their respective functions, was given, and it was explained how nectar is collected, stored, and converted into honey in the bag of the insect preparatory to being stored in the honey-cells. The various organs on the body and legs of the worker bee were described, and a very interesting part of the lecture was that devoted to the organs which are brought into play in the collecting of pollen; and it was shown how well this part of the work of the bee assists in the cross-fertilisation of many of our most useful and ornamental plants, which would otherwise remain entirely sterile or produce poor seed. In dealing with the internal organs, the lecturer explained the function of the chyle stomach, and its relation to the cause of Isle of Wight Disease.

The exhibits were:—20 new varieties of Daffodils, from Mr. D. KING, Murrayfield; Apple "Five Crown Pippin," from Mr. D. ARMSTRONG, Kirknewton House Gardens, Midlothian; forced Rhubarb, from the CITY OF EDINBURGH DISTRESS COMMITTEE, Murieston, per Mr. Cairns.

NATIONAL CHRYSANTHEMUM.

(Continued from page 204.)

AFTER pollination, all that can be done is to give the best conditions for pollen germination. These are dry air, light, warmth, and protection from insects. The last is easily carried out, if the blooms are cut and placed in a window, by a screen of tiffany or scrim, the more porous the better. It is as well to look the flowers over on alternate days, and pollinate afresh if necessary.

Certain varieties are very difficult to pollinate, as the pollen drops off; some will only cross with certain others. What makes the difference I am not sure; probably the viscid secretion on the stigmas is wanting, or perhaps it may be a physical disability, the pollen tube being too large for the style.

Early in the season, with plenty of sunshine and warmth, pollen is usually fairly abundant, but in mid-season it takes some finding, and it may be necessary to pull blooms apart flower by flower in search of the valuable golden dust,

carefully placing each yellow ball in the palm of the hand or on a watch glass, until enough has been obtained. I have sometimes spent nearly an hour in finding enough pollen for one cross. Just how much is necessary for one lower I am not certain; probably a single grain might do, as a flower can bear but the one seed; but it is better to pollinate freely, in case pollen germination is hindered in some way or other. On damp days it is worth while to pull out the dry flowers, leaving the disc flowers plenty of room for development.

In December it is even more difficult to find the necessary pollen, and it is as well to try to advance the flowering season of the late varieties by striking them late and taking the first bud. If flowering can be advanced to November there will be a much greater chance of success. As an alternative to late striking, late stopping might be practised, and the terminal buds taken off to try to get over the turn of the year, running the blooms well into January or February. Pollen may be kept for a few weeks by the following method:—First well dry a test tube and collect and place some pollen in it, then insert a light plug of cotton wool as low down as possible. On this place a piece of carbide, and a few granules of dry calcium chloride, plug the mouth very tightly, and keep the tube in a dry, warm place.

I am inclined to believe that a plentiful supply of potash promotes pollen production. I am not sure of this, and it is difficult to discover whether anyone really knows anything at all about pollen. Still, it has seemed to me that pollen has been more plentiful when we have used most potash. If the blooms are cut, the vases should have the water changed occasionally, although this is not absolutely necessary, as I have raised seeds without a change at all, only filling up as the water evaporated. Most of my seeds have been produced by this method in our office window, and I have no reason to be dissatisfied. So far, with the results. A combination of the two methods answers very well, pollinating on the plant and cutting and placing the heads in water two or three weeks after. The danger of damping is obviated in this way. The flower-leads require very little attention after pollination, an occasional examination to see if there are any damp florets being all that is necessary. Nothing further can be done until the head is quite dry, when if the florets are gently pushed apart no trace of greenness can be seen. The seeds take from four to eight weeks to grow and ripen. No attempt should be made to shake them out until the head is ready to fall to pieces at a light touch. Then a seed packet may be gently slipped over, and the head cut off with about 2 inches of stem, and the label placed inside. The various packets should be placed in a box and stored in a warm, dry place, to await the owner's pleasure.

Each seed packet should be numbered before sowing, and the particulars of each cross should be entered in a book against that number.

The first week in February is the best time to sow the seed; if sown earlier than that promising seedlings may be lost for lack of light. A light sandy compost, with some peat and leaf-mould, will answer well; but the Chrysanthemum is not particular in this respect. We sow in 48 and 60 sized pots, according to the number of seeds of each cross. A temperature of 60°, with a fairly moist atmosphere, is suitable, a piece of glass being placed over each pot to check evaporation. As soon as the seed leaves unfold, the pots should be placed as near the light as possible, but not where there is a draught. When about 1½ inch to 2 inches high the seedlings are ready for potting, and the first shift should be into 2½-inch pots, using the same kind of compost as before. The various pottings necessary afterwards are from thumbs to 60's, 60's to 48's, and 48's to final pots, which should be 24's or 16's, at the same time gradually changing from the light soil to the ordinary Chrysanthemum compost.

After treatment consists in the ordinary routine as regards staking, tying, and feeding. Different buds should be taken to determine the right one for effective flowering. As a rule a seedling plant throws more suckers than others; these should be cut back, and not pulled out. If pulled out, the plant gives very little stock.

(To be concluded.)

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MARCH 16. — Committee present: Rev. J. Crombleholme (in the chair), Messrs. J. Cypher, J. Evans, A. R. Handley, D. McLeod, W. Shackleton, S. Swift, H. Thorp, and H. Arthur (secretary). Visitor: Mr. D. A. Cowan.

AWARDS.

FIRST-CLASS CERTIFICATES.

Laelio-Cattleya luminosa aurea Haddon House variety (*L. tenebrosa* Walton Grange variety × *C. Dowiana aurea*), a fine flower of good shape; sepals and petals golden yellow with intense purple lip, from P. SMITH, Esq.

Cymbidium Alexandri variety *Linda* (eberneo *Lowianum* × *insigne*), from Messrs. J. and A. McBEAN.

Lycaste Skinneri variety *Mrs. G. Hamilton Smith*, from Messrs. SANDER AND SONS.

AWARDS OF MERIT.

Laelio-Cattleya luminosa aurea Ashlands variety, *L. C. Beatrix* variety *Nobilior* (collistoglossa × *C. Schroderae*) and *Odontioda illustris* Ashlands variety (*Od. Charlesworthii* × *Od. m. illustrissimum*), all from R. ASHWORTH, Esq.

Cymbidium Schlegelii aurum (*Wiganianum* × *insigne*) and *C. Alexandri* variety *Rex* (eburneo *Lowianum* × *insigne*), both from J. AND A. McBEAN.

Brassia-Cattleya-Laelia Alwyn Harrison (?) × *B. Digbyana*, from Mr. ALWYN HARRISON.

AWARDS OF APPRECIATION.

Odontioda Evelyn and *O. Mary Hindle*, both from TOM WORSLEY, Esq.

Miltonia Hyacin variety Sirius, from R. ASHWORTH, Esq.

Odontocidium Juna Harrison's variety (*Oncidium tigrinum* × *Oulm. ramosissimum*), from Mr. ALWYN HARRISON.

CULTURAL CERTIFICATE.

To Mr. WM. COUPE (gr. to John Hartley, Esq.), for *Lycaste Skinneri alba*.

GROUPS.

The following Medals were awarded for collections:—

Silver-Gilt Medal to R. ASHWORTH, Esq., Newchurch (gr. Mr. W. Gilden).

Large Silver Medals to TOM WORSLEY, Esq., Haslingden (gr. Mr. T. Wood), Messrs. CYPHER AND SONS, Cheltenham, Mr. ALWYN HARRISON, Redbourn, Hertfordshire, and Messrs. J. AND A. McBEAN, Cooksbridge.

MARCH 30.—Present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Evans, P. Foster, A. R. Handley, A. J. Keeling, D. McLeod, W. Shackleton, S. Swift, H. Thorp, and H. Arthur (secretary).

The following awards were made for groups:—

R. ASHWORTH, Esq., Newchurch (gr. Mr. W. Gilden), a Silver Gilt Medal.

TOM WORSLEY, Esq., Haslingden (gr. Mr. T. Wood), Silver Gilt Medal.

O. O. WRIGLEY, Esq., Bury (gr. Mr. E. Rogers), Special Vote of Thanks.

F. A. HINDLEY, Esq., Bradford, a Bronze Medal.

Messrs. J. and A. McBEAN, Cooksbridge, a Large Silver Medal.

FIRST-CLASS CERTIFICATES

were awarded for the following novelties:—

Odontoglossum Arminavillense alba var. "The Premier," and *O. crispum* var. "Laura," both from JOHN HARTLEY, Esq.

Odontoglossum illustrissimum var. "Evelyn Worsley," from TOM WORSLEY, Esq.

Cymbidium Alexandri var. "Melliduum" (*C. eburneo-Lowianum* × *C. insigne*), from Messrs. J. and A. McBEAN.

AWARDS OF MERIT.

Cypripedium Hazeldene (Harefield Hall × *Hindcanum*), *C. The Don* (*C. bellatulum* × *C. fulshawense*), and *C. Marcella* (*C. Lreanum giganteum* × *Drury Will*); *Odus, Joan* var. "Golden Duven," and *Joan* "Carter Place" var.; and *Odontoglossum excellens* "Carter Place" var.: all from TOM WORSLEY, Esq.

Brassia-Cattleya-Laelia Joan "Marfield" var. (*Cattleya Octave Doin* × *B. C. L. Mrs. Gratix*), from R. ASHWORTH, Esq.

Odus, Joan "The Knowle" var., from JOHN HARTLEY, Esq.

AWARD OF APPRECIATION.

Odontoglossum Richmond (*O. Marie* × *O. Mabel Whiteley*), from TOM WORSLEY, Esq.

CULTURAL CERTIFICATE.

To Mr. E. ROGERS for a well-flowered plant of *Eulophiella Elizabethae*.

ROYAL CALEDONIAN HORTICULTURAL.

APRIL 4.—At a meeting of the Council of this Society, held on Tuesday, the 4th inst., it was decided to hold a fruit and flower show on September 6 and 7. The Council had before them an exhibit of Daffodils (School's varieties) from Mr. David King, Murrayfield, which was awarded a Silver Medal and Cultural Certificate.

LEEDS PROFESSIONAL GARDENERS'.

THE Professional Gardeners' Lodge, Leeds, being branch 6776 of the Grand United Order of Odd-fellows, is open only to men between 18 and 40 years of age, residing in any part of the United Kingdom who have been engaged for at least three years successively in some branch of horticulture.

The forty-ninth annual report and statement of accounts shows that the total income for the year has been £201 6s. 9d. and the payments to members £118 9s. 8½d., being a saving for the year of £82 17s. 0½d. The committee state that at the commencement of the fiftieth year of the existence of the Lodge (it was formed on January 1, 1867) the accumulated funds exceed £2,000, averaging about £16 per member.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending April 12.

The ground drier than for four months.—Taken as a whole, this proved rather a cold week. The first three days were cold, but after that the day temperatures were, as a rule, high for the time of year. On the other hand, all the nights, with the exception of the last one, were cold. On the coldest night the exposed thermometer registered 10° of frost. The ground is at present time of average temperature both at 1 foot and 2 feet deep. Rain fell on four days, but to the total depth of only half an inch. A few drops of rainwater have each day come through the percolation-gauges, so that the ground is now drier than it has been since the closing week in November last, or for four months. The sun shone, on an average, for 7½ hours a day, which is 2½ hours a day longer than the mean daily duration for the time of year. Light airs and calms alone prevailed until the last day of the week, when there was at times a moderate breeze. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 5 per cent. A swallow was first seen on the waterless beds at Berkhamsted on the 11th inst., which is two days earlier than its average date for the previous 25 years and one day later than last year. E. M.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting Box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. Edwin Durham, for 19 years Gardener to the late Mr. H. FANE GLADWIN, of Seven Springs, Cheltenham, as Gardener to HENRY MASON, Esq., Holne Park, Ashburton, South Devon.

Mr. John Sleightholm, for 5 years Gardener at Bank Top House, Bradford, as Gardener at Ashwood, Headingley, Leeds.

Mr. C. H. Adams, for 5½ years Gardener to A. T. WEBSTER, Esq., Priestwick House, Witley, Surrey, as Gardener to A. H. RENSHAW, Esq., Watlington Park, Oxfordshire. [Thanks for 1s. for R.G.O.F. box.—Eds.]

CATALOGUES RECEIVED.

Miscellaneous.

THOMAS S. WARE, LTD., Feltham.—Begonias and Hardy Plants.

O. ENGELMANN, Saffron Walden, Essex.—Perpetual-flowering Carnations.

J. ATTWOOD, Ellipseum Factory, Stourbridge.—Heating apparatus.

MARKETS.

COVENT GARDEN, April 13.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Azalea, white, per doz. bun.	4 0-5 0	Pelargonium, per doz. bunches, double scarlet	4 0-6 0
Camellias, white, per doz.	1 9-2 0	Primroses, per doz. bun.	0 9-1 0
Carnations, per doz. blooms, best American varieties	1 6-2 6	Richardias (Arums), per doz.	2 6-3 0
— smaller, per doz. bunches	— —	Roses: per dozen blooms—	— —
— Carola (crimson), ex. large	2 6-3 0	— General Jacquemont	1 0-1 6
— Malmaison, per dozen blooms	— —	— Duchess of Wellington	2 0-2 6
— pink	6 0-10 0	— Lady Hillingdon	1 6-2 6
Daffodils, per doz. bunches	— —	— Liberty	2 0-2 6
— Burial	1 6-2 0	— Madame A. Chateaux	2 0-2 6
— Double Van Zion	1 6-2 0	— Melody	3 0-4 0
— Emperor	1 6-2 6	— Mrs. Russell	— —
— Empress	1 6-2 6	— My Maryland	2 0-2 6
— Sir Watkin	1 3-1 6	— Niphotos	2 0-2 6
— Victoria	1 6-1 0	— Ophelia	3 0-5 0
Eucharis per doz.	2 0-2 6	— Prince de Bulgarie	2 6-3 0
Freesia, white, per doz. bun.	1 6-2 0	— Richmond	1 6-2 0
Gardenias, per box of 12 and 18 blooms	3 0-4 0	— Sunburst	2 0-2 6
Iris, Spanish, per doz. blooms	— —	— White Crawford	2 6-4 0
— white	1 6-1 9	Spiraea, white, per doz. bun.	8 0-9 0
— blue	1 6-1 9	Stephanotis, per 72 pips	4 0 —
— mauve	1 6-1 8	Stock, double white, per doz. bunches	— —
— yellow	1 6-1 9	Tuberose, per packet, 24 blooms	— —
Lapageria, per doz. blooms	— —	Tulips, Darwin, mauve, per doz. blooms	1 6-1 9
Lilac, white, per doz. sprays	3 0-4 0	— red or pink varieties, per doz. blooms	1 3-1 9
Lilium longiflorum, per doz. long	2 6-3 0	— single, white, per doz. bunches	8 0-10 0
— short	2 0-2 6	— coloured, per doz. bun.	10 0-12 0
— lancifolium album, long	— —	— red, per doz. bun.	10 0-12 0
— short	2 0-2 6	— pink, per doz. bun.	12 0-15 0
— lancifolium rubrum, per doz. long	1 6-2 0	Violets per doz. bunches	1 6-2 0
— short	1 6 —	— double, Marie Louise, per doz. bun.	4 0-6 0
Lily-of-the-Valley, per dozen bunches	— —	— Princess of Wales	2 6-3 0
— extra special	24 0 —	White Heather, per doz. bun.	— —
— special	15 0-18 0		
— ordinary	— —		
Narcissus ornatus, per doz. bunches	2 0-2 6		
Orchids, per doz.	— —		
— Cattleya	12 0-15 0		
— Cyrtopodium	2 0-3 6		
— Dendrobium	1 6-2 0		
— Odontoglossum crispum	4 0-5 0		

REMARKS.—The market is full of excellent home-grown Daffodils, obtainable at the prices quoted. Narcissus ornatus appear to be less plentiful, and prices are rising. There is still a shortage of small white flowers, such as Guernsey White Pearl Azalea, and Pelargoniums. French White Stock is practically useless, being spoiled in transit. Star of Bethlehem is over, except for a few boxes, which are being received from Guernsey, and find a ready sale. Lilium longiflorum and Arum (Richardias), although plentiful at present, are expected shortly to advance in price. Large quantities of these flowers are required for Wales this week for Palm Sunday, and next week also large quantities will be required for Easter decorations. Other flowers, for which a good demand is expected, include white Roses, white Spiraea, white Tulips, Star of Bethlehem, Lily-of-the-Valley, white Narcissus, and Sweet Peas. The first consignment of Stephanotis has reached the market. Rose are now offered in great variety, the blooms being the finest offered for sale this season. Prices are very low. Carnations are improving in quality. The supply of Spanish Irises and Darwin Tulips is limited; mauve Iris is the most plentiful.

Fruit Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Apples—		Grapes: English,	
— Athelmarle, per barrel	40 0-44 0	— New Hambros, per lb.	3 0-5 0
— English cooking, per bus.	9 0-14 0	— Almeria, per 12 lbs.	12 0-16 0
— Nova Scotia, per barrel	34 0 —	— Cape, per 10 lb. box	5 0-15 0
— Oregon, per box	14 6-16 0	— Lemons, per case	10 6-35 0
— Tasmanian & Australian, per case	8 0-18 0	— Lychees per box	1 4-1 6
Bananas, bunch—		Nuts, Brazils,	
— Medium	7 0-9 0	— now, per cwt	60 0-64 0
— X-medium	8 0-10 0	— Coconuts, per 100	22 0-24 0
— Extra	9 0-13 0	Oranges, per case	12 6-42 0
— Double X	10 0-15 0	— Californian Seedless, per case	23 0-24 0
— Giant	16 0-18 0	— Palmero Bit, per case	15 0-16 6
— Red, per ton	118 0 —	Pears, per case	6 0-10 0
— Jamaica, per ton	116 0 —	— Plums, Cape	8 0-12 0
Dates, per doz. boxes	5 6-6 0	— Strawberries, forced, per lb.	4 0-8 0
Grape Fruit, per case	22 0-24 0	Walnuts, Naples, per cwt.	75 0 —

Vegetables: Average Wholesale Prices.

	s.d. s.d.		s.d. s.d.
Artichokes, Globe, per doz.	3 6-4 0	Natural Seakale, per bus.	5 0-6 0
— Jerusalem, per bag.	5 0 —	Onions—	
Asparagus, Paris green & Lauris	1 9-4 0	— Egyptian, per bag	22 0 —
— English	2 0-2 6	— spring, per doz. bun.	5 0-12 0
Beetroot, per bag	5 0 —	— Valencia, per case	22 0-28 0
Beans, Broad, per pad (France)	6 0-7 0	Parsnips, per bag	5 0 —
Broccoli, Sprouting, per bus	4 0 —	Peas, per pad (France)	7 0-10 0
Cabbage, Spring, per box of five doz.	5 0 —	Potatoes	
Carrots, per cwt.	16 0 —	— Algerian, per lb.	0 3-0 4
Cauliflowers, per tally	10 0-15 0	— Channel Islands, per lb.	0 4 0-5 0
Celeriac, per doz.	4 6-5 0	Radishes, per doz. bun.	0 6-2 6
Celery, per fan	1 0-1 6	Rhubarb, forced, per doz.	1 0-1 3
Cucumbers, per doz.	2 6-4 6	— natural, per doz.	3 0 —
English Beans, per lb.	0 10-1 0	Savoy, per tally	10 0 —
French Beans, (Guernsey), per lb.	0 10-1 0	Seakale, per doz. punnets	18 0-21 0
Garlic, per lb.	0 10-1 0	Scotch Kale, per bus.	3 6 —
Greens, per bag	5 0 —	Shallots, per lb.	0 6-0 8
Herbs, per doz. bun.	2 0-6 0	Spinach, per bus.	7 0 —
Horse-radish, per bundle	3 0-5 0	Tomatoes	
Leeks, per doz.	2 6-4 0	— Worthing, per lb.	1 6-2 0
Lettuce, Cabbage and Cos, per doz.	1 0-6 0	— Te. eriffe, per bundle	15 0-20 0
Mushrooms, per lb.	1 0-2 0	Turnips, per cwt	3 6 —
— Buttons	1 6-2 0	Turnip Tops, per bus.	3 0 —
Mustard and Cress, per doz. punnets	1 0 —	Vegetable Marrows, per doz.	8 0-9 0
		Watercress, per doz.	0 6-0 10

REMARKS.—There are a few English Apples still to be had. The first arrival of Australian and Tasmanian Apples is to hand. It included Cox's Orange Pippin, Cleopatra, Jonathan, and Ribston Pippin. Consignments are also reaching the market from Nova Scotia and the Western States. A few Californian Newtown Pippins and Oregon are still available. Cape fruits to hand chiefly consist of Pears Doyenné du Comice, Beurré Bosc, Glou Morceau, and Winter Nelis; also Hannepot, Gros Colmar, and Hermitage Grapes, and a few Plums. Forced Strawberries are not quite so plentiful this week. Last season's crop of English Grapes is now exhausted, but the new crop of Black Hamburg is beginning to be available. Tomatoes, Beans, Vegetable Marrows, Mushrooms, and Cucumbers are arriving from Worthing, and supplies of Beans and Peas from the Channel Islands are increasing. The supply of Tenerife Tomatoes is limited, but Cucumbers and Asparagus continue plentiful. Of the last there are some fine samples from English and French growers. The supply of outdoor vegetables is shorter. — E. H. R., *Covent Garden Market, April 12, 1916.*

Potatoes.

	s.d. s.d.		s.d. s.d.
Blackland	6 6-7 0	Lincoln	7 0-7 6
Dunbar	9 6-10 6	Eclipse	7 0-7 3
Kent	— —	Evergood	7 0-7 3
Eclipse	6 9-7 6	King Edward	7 6-8 0
King Edward	7 6-8 0	Queen	6 9-7 6
Queen	6 9-7 6	Scotch	— —
		King Edward	7 0-7 6

REMARKS.—Trade is very firm, and prices are much higher. Only a few tubers are reaching the market, and stocks in London are very low. — E. J. Venborn, *Covent Garden and St. Pancras, April 12, 1916.*

Obituary.

JULES GRAVEREAUX. It is with very great regret that we learn from *Le Jardin* of the death of the eminent French rosarian, Monsieur Jules Graveraux. In his rosary at L'Hay he created, not merely a collection of Roses unique in the whole world, but also instituted and prosecuted most important scientific work. Thanks to him, the study of the Rose from every point of view, botanical, horticultural, and industrial, has made immense progress. Bagatelle, la Malmaison, and more recently l'Elysée, owed to him the soundest advice and the most valuable aid. His inestimable services were justly rewarded by the ribbon of the Order "Commander du Mérite Agricole" and the badge of "Officier de la Légion d'Honneur." His memory will live long in the minds of Rose-lovers, particularly the members of the Society of Amis des Roses, of which he was for long the honoured president. He leaves two sons, Messieurs Henri and René Graveraux.

FRANÇOIS BERTHAULT. From the March number of the *Revue Horticole* we learn of the death, which took place on February 12, of François Berthault, Director of Agriculture under the French Ministry of Agriculture. Berthault was the son of an agriculturist established near Bourges, and early became proficient in all kinds of cultural operations, besides doing

excellent work at school, and afterwards a Grignon, where he completed his studies. He obtained high honours at this celebrated establishment, and shortly after leaving, returned there as Professor of Agriculture. A few months after his nomination to this post he was given the direction of the grounds in France and Algeria, administered by the Crédit Foncier. This difficult and delicate task was fulfilled with remarkable ability, and his arduous duties were further increased by exhaustive researches in various agricultural subjects. It was without regret that he abandoned his work at Grignon and for the Crédit Foncier, on being called to fulfil the more important duties of Director of Agriculture. His indomitable energy was the direct cause of his death, at the early age of fifty-nine, which was attributable to no other cause than that of over-work. Beside his other honours, he was a member of the Académie Nationale d'Agriculture, Officier de la Légion d'Honneur, and Commandeur du Mérite Agricole.

SACKVILLE S. BAIN.—We read in the American journal, *Horticulture*, of the death of Mr. S. S. Bain, a nurseryman of Scottish origin, who died at Westmount, P.Q., Canada, on March 10. Mr. Bain was born at Cromarty, and emigrated to Montreal at the age of 26. He established large nurseries at Montreal and Verdun which proved very successful.

ANSWERS TO CORRESPONDENTS.

Books: J. E. K. The book is out of date and of little practical value. If you are able to find a purchaser, probably ten shillings would be the utmost you would receive for it, and that only if the volumes are in good condition.

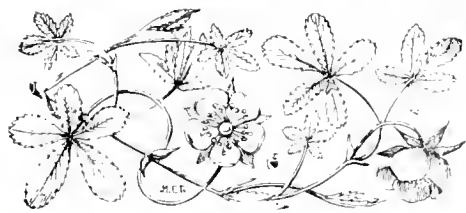
NAMES OF FRUITS: J. S. Apple Winter Strawberry.—E. J. R. Apple Annie Elizabeth.

NAMES OF PLANTS: J. S. The specimens were insufficient for determination; send when in flower.

SCHOOL FOR WOMEN GARDENERS: J. McM. The gardening school you mention is at Studley Castle, Studley, Warwickshire. The Warder is Miss Hamilton, at the College, from whom you can obtain prospectus and all particulars.

VINES FAILING TO PRODUCE BUNCHES: J. F. F. Neither the weather nor the treatment this season is responsible for your vines producing tendrils instead of bunches. If the misfortune is not caused by a want of firmness in the growth, or a lack of ripening both above and below ground, it is probably owing to an insufficiency of phosphates or of lime in the soil—perhaps both. The bones supplied in the winter are not likely to benefit the vines much this season, and in some soils half-inch or inch bones decompose very slowly and are consequently of little use. Bone dust or steamed bone flour are quicker and more certain of action. To produce immediate effects and cause the vines to improve for another season, dissolved bones should be applied as soon as possible, at the rate of 6 pounds to the perch, and if no lime has recently been given, about half a peck to the perch should be applied a fortnight before the dissolved bones, the lime being slaked and made sufficiently damp to prevent its being blown about. Both the lime dressing and the dissolved bones may be repeated in the autumn. Steamed bone flour or basic slag may be given in the autumn or winter, to furnish phosphates for future seasons, and a little nitrogenous manure, of some kind, at intervals during the growing season. You are quite right in applying wood ashes. In order to ensure thorough ripening of the canes in your moist climate, no second growths should be allowed to form, and the atmosphere of the house should not be too humid at any time.

Communications Received.—D. H. S.—J. O'B.—R. G. A.—S. A.—N. R. S.—C. J. C.—W. T.—J. H. R.—A. C.—N. A. S.—G. B. H.—E. A.—G. C.—A. P.—A.—Wood—E. B.—Prof. Balfour—Hugo B.—Sweden—G. A.—A. O.—Percy Cane—A. McV.—J. F. S.—Sons—W. W. P.—A. C. Paris—J. P. & S.—C. H. P.—S. A.—A. J. M.—T. A. W.—Southern Grower—R. P. B.



THE Gardeners' Chronicle

No. 1530.—SATURDAY, APRIL 22, 1916.

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CALLISTEPHUS SINENSIS.

IT is generally assumed that the China Aster was first cultivated in England by Philip Miller, who states in the eighth edition of *The Gardeners' Dictionary* that he received seeds from France in 1731, the produce of which gave red and white flowers, and later in 1736 received seeds of a blue-flowered variety. These were single. The plant is illustrated and described in *Hortus Elthamensis* (1732) (t. xxx., 14) as a most pleasing purple, at first like Peach blossom, but when older the flowers were tinted with ruby-purple. The seeds in this case were communicated from Leyden by Adr. van Royen, Professor of Botany at that place. Dillenius began the preparation of the above-named work in 1724, and the plates afford evidence of two engravers having been employed, the one on the earlier of the volumes and the other on the remaining portion, the engraving of the Aster being the work of the first. Unfortunately Dillenius did not follow to an appreciable extent the custom of Clusius in stating the year in which seeds and plants were received, so we can only surmise that the seeds of the China Aster, which he states were brought from Northern China, must have been received and cultivated at Eltham at an earlier date than that given by Miller. The latter further mentions having received in 1732 "seeds of the double flowers, both red and blue, and in 1753 the seeds of the double white." As late as 1807 Dr. Martyn notes in addition to these only a red and white variety. But according to Justice, the early Scottish florist, the plant was more varied in colour, much earlier. He states, "In the year 1749 I raised many extraordinary beautiful seminal Varieties of Pink, deep

Carnation, blue, white and Purple Colours, and one in particular with a stript blue and white Flower." A rough double flower is portrayed in Plate 55 of *Eden* (1759), and in the text, referring to doubles, it is remarked: "In Colour they are either violet, blue, crimson, or white; or of any of the Tincts which Painting can produce from a Mixture of those three." In Mean's edition of *The Practical Gardener* (1817) there are noted: "Purple, blue, red, white, striped, bonnet-flowered, quilled, double." *Flora Domestica* in 1823 contains a shorter list, and it is apparent that we are indebted to Continental florists for a break in this monotony; I find in James Carter's list of seeds for 1844 the offer of "10 splendid varieties German Asters, separate, many new, 10s." Singles were under a cloud for very many years, and anyone who desired to grow these had, like myself, to import the seed from France, until at last our seedsmen awoke to the need of providing it for their customers.

At the present time it would be difficult to say which section is the more popular. For long the comparatively flat-flowered "Victoria" and the "Chrysanthemum" were the most generally useful, and dwarf forms of these have enjoyed much prominence in beds and borders in summer and autumn. The globe-flowered was and is of value, but only in the warmer parts of the country, and the Quilled, as we have seen, is a very old break, and still maintains to some extent its hold for distinctiveness and its value for late flowering. The more recent introduction of the Comet strain practically revolutionised the plant, and the singles and Ostrich Plumes have done wonders for present-day decorative gardening.

It was Loudon, I think, who disposed of this plant with the remark that it would grow anyhow and anywhere. That, however, is a mistake. It is one of those plants which yields wonderful results from a system of enlightened cultivation, and, in the hands of an enthusiast who cultivates it solely for exhibition, its development is of an extraordinary nature compared with that obtained from ordinary good cultivation. The general principle is the same as that involved in the cultivation of such a plant, for instance, as the Chrysanthemum—one stem to each plant and one flower to each stem, and grown unchecked from beginning to finish. The flower repays a little dressing, e.g., the removal of petals that detract from its symmetry, and in a flat flower the centre can often be improved by a re-arrangement of the petals. For cut flowers, for which Comet varieties are so valuable, only a limited number should be allowed to develop, not only to secure a larger class of bloom, but also to procure a longer stem.

The sections I have employed for some years for garden decoration have been confined to singles, to the dwarf Ostrich Plumes, and to Quilled. The singles are usually planted where they are to flower: the others in reserve, to be transplanted to fill blanks left by earlier flowering plants. The seeds are sown

later than usually advised. I find the beginning of April quite soon enough, the seeds being sown thinly in beds of light soil in a cold frame, whence the seedlings are transplanted to positions chosen for their growth in May. The colours which give the greatest satisfaction are white, light blue and pink; and in the Quilled, in addition, lemon, mauve and dark purple. Serious losses are sometimes sustained from the epidermis of the lower parts of the stems being destroyed by a parasitic fungus. The attack is prepared during the period which the young plant passes in a moist, warm atmosphere; and, to judge from my own experience, I should be inclined to say that if the plants were raised in a cold frame or in the open, there would be complete immunity from attack. Further steps could be taken against the fungus by having the compost in the seed-bed quite moist when the seeds are sown and the sash or sashes covered with mats till the seedlings begin to appear, no moisture need afterwards be given until the seedlings are well established, and by applying water when at length it is needed, early in the morning of a fine day, so that the surfaces quickly dry. I have never seen it here. R. P. Brotherston, Tynningham Gardens, Midlothian.

THE ROSARY.

ROSE HEDGES.

THE great value of Rose hedges is not fully appreciated, and so Privet or Quickthorn may be seen where beautiful hedges of Roses would be equally serviceable as screens or dividing lines.

It may be urged that though the summer effect of a hedge of Roses is very fine, what can be said of the winter effect when the foliage has fallen? Well, there are now several varieties that retain their foliage well through the winter, such as American Pillar, Edmond Proust, Aimée Vibert, scandens, Reine Olga de Wurtemberg, Albéric Barbier, Tea Rambler, Ruby Queen, and others. And in many instances where the foliage has fallen there are beautiful berries, with their cheerful effect.

A well-developed hedge of Wichuraiana Roses placed around the Rose garden, or especially on the north and east sides, is of great value as a screen from cutting winds. Not only are these Roses of rapid growth, but they become so dense as to make a veritable thicket if left almost unpruned, as they may well be for the purpose of a screen.

Tall hedges may also be formed with the climbing sports of Hybrid Teas, such as Climbing Caroline Testout, Climbing Richmond, and others, and as these are continuous in flowering they become most serviceable. Another useful hedge Rose is Rosa rugosa, the pink and white single varieties, which make a fine show of flowers in summer and of handsome fruits in autumn.

The Penzance Sweet Briars are already frequently used for hedges. They produce beautiful masses of colour in June, succeeded in autumn and winter by scarlet hips. If the seed pods are removed early, many of the varieties will flower a second time.

A grand Rose for a 6ft. to 7ft. hedge is Gruss an Teplitz. It is very free in flowering, but has a bad tendency to mildew, which, however, may

be prevented in a measure by planting in deeply dug or trenched soil.

Moderately tall hedges, say from 5 to 6 feet high, can be made with such fine perpetual bloomers as *Alister Stella Gray*, *Longworth Rambler*, or *Deschamps*, as it should be called, and *Aimée Vibert à fleurs jaunes*. These three in combination would be very beautiful. For a hedge of about 5ft. *Wm. Allen Richardson* is good, and its colour richer than when planted by a wall.

The common China, as I have seen it in Devonshire, will attain a height of 7 to 8 feet if not pruned. Other China varieties for lower hedges are *Laurette Messimy*, *Comtesse du Cayla*, and *Fabvier*. These will grow easily to 4 feet high, and if the site be selected carefully are a never failing source of pleasure.

The Hybrid Musk Roses, of which there are several new varieties, will be delightful for hedge work, attaining heights from 4 to 6 feet. Such sorts as *Danæ*, *Moonlight*, *Clytemnestra*, *Queen Alexandra*, *Adrian Riverchon*, and *Trier* are most beautiful. They have undoubtedly originated from the last-named variety, and it is a mistake to call them Hybrid Teas.

I would mention one Rose that was a perfect

the variety *Etoile de Portugal*, the introduction of a Frenchman, M. Cayeux, and reputedly a cross between *R. gigantea* and *Reine Marie Henriette*. This hybrid is not unlike *Fortune's Yellow* in form and colouring, but more pink, and this lends point to the assumption that *Fortune's Yellow* is a hybrid from *R. gigantea*.

Mr. Wm. Paul, in the *Rose Garden*, places *Fortune's Yellow* in the group *R. Banksiae*, and says it is probably a hybrid between some variety of *Rosa Banksiae* and the yellow China (*Thé Jaune*), whilst the late M. Gravereaux, in his Catalogue, put it among the *Noisettes*.

There is a variety of Banksian named *Fortuneana*, a cross, according to M. Crépin, between the Banksian Rose and *R. sinica*. I have this variety. It has double whitish flowers, the wood possessing very many thorns. I fear it is often sold as the White Banksian, but it is certainly not the lovely and violet-scented *Banksia alba*. The crossing of the various species of the Rose is one that should be encouraged. Who would have thought such a gem as *Rosa sinica* var. *Anemone* could have been obtained from *R. sinica*? and its free-flowering propensity compared with that of *R. sinica* grown in the open,

CAMPANULA CELSII.

This biennial *Campanula*, to which Mr. Elwes refers in his notes of March 18 (see figs. 93-95), received the R.H.S. Award of Merit at the Chelsea Show, May 19, 1914, under the name of *C. tomentosa*, when exhibited by Miss Maud Landale. The silvery, downy leaves of the first year's growth are produced in rosettes (see fig. 93), from which arise in the second year the trailing spikes of pale lavender-coloured flowers. The photographs reproduced are sent by Mr. C. D. Rudd, in whose garden at Sheilbridge, Argyllshire, they were taken. Fig. 94 shows the plant growing in a wall.

Mr. Rudd sends the following particulars in a letter to Mr. H. J. Elwes:—"The specimens seen on the wall and others in a moraine were planted out as seedlings and exposed to more than 25 degrees of frost, followed by the excessive damp and drizzle of the Scotch West Coast, so they may be considered fairly tough. The plant in the moraine, growing vertically, was difficult to take, and the picture hardly does the plant justice. I have found much difficulty in ripening satisfactory seed, and have raised very few plants this year. I intend this June to try pollinating the blooms and keeping the plants on a shelf close to the roof-glass. The flowering plants this year promise as well as ever, especially those in pots, which I keep in a cold Alpine house."

THE ROYAL BOTANIC GARDENS, EDINBURGH.

A visit paid in the first week of April to the Edinburgh Royal Botanic Gardens showed that these gardens, so ably presided over by Professor Bayley Balfour, F.R.S., the Regius Keeper, fully maintain their high standard, even though the stress of war times has caused a great depletion of the staff. Since the outbreak of war no fewer than ninety of the staff have joined the Colours, and, with a feeling of respect for those who have lost their lives in the great war, Professor Balfour (who has lost his only son) is naming new plants in honour of the members of the staff who have fallen.

The corridor was bright with *Imantophyllums*, and adorned with the flowers of *Rosa multiflora* and *R. sinica* *Anemone* on the rafters, together with other climbing plants on walls and roof. *Viburnum macrocephalum* was very good on the walls, with some of the *Rondeletias* and other good things.

Also in the corridor we observed *Cytisus Hilbrandtii*, with others of the race, planted out, and in full flower. *Prostanthera rotundifolia*; *Goodia lotifolia*; *Ranunculus cortusaefolius*; *Monochaetum alpestre*; *Corydalis Allenii*, excellent in a pan; the white *Ourisia macrophylla*, with *Rhododendrons* of various classes and many other plants in bloom.

Orchids are well represented, but the pride of place must be given to the Robertson collection of *Cypripediums*, *Cattleyas*, and *Odontoglossums*, the collection of the late Mr. E. H. Robertson, of Burnside, Forfar, and presented by his widow. It is a noble gift, and comprises about a thousand plants of superb quality.

In houses and plant-pits are many good things: *Linum Pallasii*, yellow, of the arboreum type; the uncommon white *Erysimum capitatum*, probably a biennial; *Wahlenbergia vincaeflora*; *Rhododendron* (*Azalea*) *linarifolium*; the yellow *R. elaeagnoides*; *Teucrium achainis*, referred by the *Index Kewensis* to *T. Polium*; the pleasing *Grammauthe Delavayi*, and many other good plants were seen.

Of *Primulas* there seem no end, and Professor Bayley Balfour is doing inestimable service to both botany and horticulture by his studies of

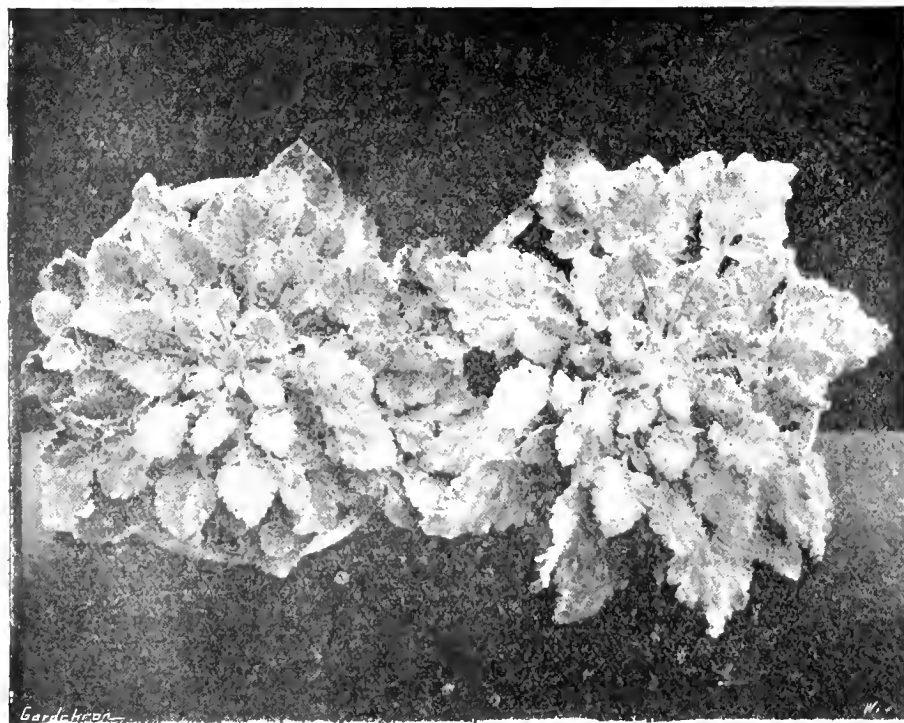


FIG. 93.—*CAMPANULA CELSII* IN 8-INCH POTS IN PREPARATION FOR FLOWERING IN THE SPRING.

mass of bloom all last summer and autumn. Its name is *Birdie Blye*, a cross between the *Rambler Hélène* and the *Tea Rose Bon Silène*. It is of American origin, and I consider it splendid for a 4ft. hedge, or to form big bushes. There are numerous other Roses suitable for hedges, but I have named a very good selection.

In preparing the land for hedges of Roses trench a border 3ft. wide, and at least 2ft. deep, working in good manure liberally.

The taller hedges will need supports of stout posts and wire, but the lower hedges will take care of themselves. Instead of pruning much the first year I prefer to tie out the growths somewhat in palmate fashion. Then, when basal growths are plentiful, as they will be, the older shoots may be cut away. Some old wood should be cut out to the ground every year to encourage the production of new shoots.

ROSA GIGANTEA.

The notes of *White Rose*, p. 147, are most interesting and instructive. Probably he is unaware that M. Crépin's prophecy regarding a hybrid production has already been fulfilled in

gives us hope that even such a shy bloomer as *R. gigantea* may by crossing give us large-flowered varieties combined with a freer blossoming.

White Rose makes reference to the pruning of *Fortune's Yellow*. Many readers of the *Gardeners' Chronicle* will recall the fine displays made of this grand Rose at the Temple Gardens by Lady Wantage and her gardener. The late Mr. Fyfe, who cultivated the Rose with unvarying success at Lockinge Park, where his son-in-law, Mr. Harriss, has now charge, laid great stress upon the importance of the pruning. His method was to hard prune the plants immediately after flowering, both those grown indoors and also outside. After growth is completed all side growths on the summer wood are pruned hard back and the weak points of all leading shoots slightly shortened. *Fortune's Yellow* succeeds admirably out-of-doors upon a west wall with a glass coping to protect it from spring frosts. This Rose is best grown upon its own roots, and as it can be readily layered there should be no difficulty in obtaining own root plants. *Experience*.

these fascinating plants. A rapid survey of some of the more striking at the time of my visit is all that can be attempted. The Bhotan *P. Menziesiana*; *P. tibetica*; *P. membranifolia*; the charming *P. pulchella*; the curious, almost stemless, white-flowered *P. vermicosa*, in bloom; with an interesting set of the various plants of the capitata group were among those in this great collection. *P. Fortunei* was highly attractive, whilst *P. conspersa*, both in the open and under glass, gives promise of being an excellent garden plant. The European *P. Palinuri* does well also, both under glass and in the rock garden. *P. florida*, a lovely blue species just described, is a gem. That dainty miniature, *P. pusilla*, was also in flower, and well deserves its name. The lovely blue *P. spicata* was in flower, and is now giving a promise of becoming perennial, in pots, at least. The trailing *Primula* from America, *P. Tolmei*, was not in bloom, but is always most interesting. *Primula* or *Omphalogramma vincaeflora* delighted one with its magnificent flower; *P. Wardii*, the fine *P. Reidii*, and *P. redolens* were of great beauty. *P. Winteri* was very handsome, both under glass and in the open, where, under a projecting ledge, it seemed quite happy.

In the rock garden and under glass were such plants as the pretty *Crocus Tauri*, *Anemone rupicola*, *Shortia galacifolia*, and a number of *Saxifrages*. Such *Saxifrages* as *S. apiculata*, with its varieties, *S. Petraschii*, *S. Boydii*, *S. Cherrytrees*, and a number of others, were excellent. *Trillium ovatum* is better than *T. grandiflorum*, and earlier. *Heloniopsis umbellata* was charming in a border, with its heads of pink. *Narcissus cyclamineus* was very good in the rock garden; so was *Omphalodes Luciliae*, with a sheet of glass overhead. *Romanzoffia Suksdorfii* was good, and the small-flowered white *Phyllachne clavigera* from New Zealand was an interesting plant. *Trifolium uniflorum* should be noted as a handsome Alpine Trefoil for the rockery or Alpine house, and *Wulfenia cordata* will please some who admire the allied *Synthyris*. In the grass and in various parts of the garden the *Chionodoxas* and *Scillas* were in full bloom, and an interesting feature is the fact that as an experiment a number of *Primulas* are planted in Rose-beds, where they are giving much promise. Among them *P. Parryi*, and others, seem to have wintered well and to be waiting for favourable weather to show their flowers. *S. Arnott*.

THE HYBRIDS OF GLADIOLUS PRIMULINUS.

GLADIOLUS PRIMULINUS is now a well-known species. It was described by Baker in 1890, and introduced into cultivation about the beginning of the present century. The species was figured in the *Botanical Magazine* in 1906 (tab. 8080), and in *Gardeners' Chronicle* in 1904, part II., p. 191. It is, like most of the other species, a native of South Africa, and in its typical form a slender plant 2-3 feet high, bearing half a dozen small, hooded flowers of the purest lemon colour. It is the only *Gladiolus* whose flowers are entirely free from any red tracery, and this is its chief merit from the gardener's point of view. This point does not seem to have been fully appreciated at first, at any rate in France, for it was only about ten years ago that Monsieur F. Cayeux made the first crosses in order to obtain hybrids of a pure yellow colour. Having used as the second parent such yellow varieties as *Safrano*, he obtained some very fine and delicately-coloured varieties which were shown at one of the meetings of the *Société Nationale d'Horticulture de France*, and were much appreciated.

A couple of years later, Messrs. Vilmorin-Andrieux and Co. began to cross the species

with some of their fine varieties of *gandavensis*, some selected varieties of *nanceianus*, and others. The results of these crosses were exceedingly good, the flowers being much larger than in the typical *G. primulinus*, and the colours varied and delicate. Since then further crosses and rigid selection have led to the formation of a strain altogether different from the others, of special value for cutting purposes, which growers are just beginning to appreciate. Large displays of the hybrid *Gladiolus primulinus* were made by Messrs. Vilmorin-Andrieux et Cie. at the Ghent International Exhibition in 1913, and at the Show of the *Gladiolus Society*, at the Drill Hall, in July last, where they won the 1st prize.

Seen in a mass and at a distance, the colours of these new *Gladioli* are much lighter than those of any other strain, and the yellow is very dominant. Purple and violet blooms are very

mixed with red, a very rich gradation, running from pale sulphur to the brightest orange or flame colour. If the blue pigment is present, we may obtain lilac or delicate mauve; but the brightest colours are pure yellow, salmon, apricot and orange, which are rare in other *Gladioli*. The spots upon the under petals, when present at all, take the form of streaks or dots upon a yellowish ground.

Being half-bred from garden varieties, which sport to a great extent, the hybrid *primulinus* produces in the second generation some plants which are stronger and carry larger, more opened, and more deeply-coloured blooms. These one might feel inclined to consider better than the smaller forms, and to select the bulbs; but such selection would result in the loss of the special merits of these *Gladioli*, just as in the case of *Lemoinei*, *nanceianus* and others.

Some growers object to the bending of the



FIG. 94.—*CAMPANULA CELSII* IN A WALL.

(See page 218.)

scarce, especially if particular care has been taken in the selection of the seed parent. On a closer inspection one finds that the stems are very thin, and about 3 feet in length; the flowers are set far apart upon the stem, are few in number, and open only three or four at the same time. The blooms are placed one above the other, instead of forming two rows, as in *gandavensis*. The petals are of very unequal size and shape, the three inferior ones being much shorter than the upper and much reflexed. The two laterals are rather large, spreading sideways, something like the wings of a bird, after the manner of the pure *nanceianus*. The upper petal is very large, and bent forward so as more or less to hide the throat. In the various colours, the yellow can always be detected and gives, when

upper petal, but in point of fact it gives to the flowers a certain air of distinction, and prevents them from looking so flat, as other *Gladioli*.

Of course, if we compare these slender flower-scapes to those of the huge *gandavensis* and *nanceianus* hybrids, we may consider these latter the finer; especially from the point of view of the effect they will produce when planted in beds or borders.

But pick out a dozen or so of these slender scapes, with their small, brightly-coloured flowers, and put them in an artistic vase, either with *Asparagus* or other foliage; they are far superior for this purpose to any of their allies. This point is of especial value as regards the English market, where flowers are so extensively purchased for indoor decoration. Here they

look better and last much longer when cut than in France, on account of the more equable temperature and more abundant atmospheric moisture. Gladioli are specially lasting flowers, as the bulbs open freely in water, and keep fresh sometimes for over a week.

It has not been thought worth while up to the present to have named varieties, as in the other strains. Being chiefly valuable for cutting purposes, they must be grown in large numbers, so as to have a plentiful supply, and they must be sold at reasonable prices. All that has been done is to separate some of them into two colours, viz., yellow and orange. With regard to the cultivation of hybrid *Gladiolus primulinus*, it is the same as for other strains. They are perhaps somewhat hardier, more robust, and more free from disease, being newly bred from a wild species. Indeed, so hardy are they that they can withstand the winter in the open ground if covered with manure or other protecting material. Bulbs will flower the same year they are planted if large enough, and the larger they are the more unfailingly will they grow in the spring. However small they may be, they will flower the same year; but the older and larger bulbs flower much sooner than the small ones, and the smallest of all sometimes only at the end of September. Thus, by planting bulbs of different sizes and at various times, one can easily obtain flowers from the beginning of July to October. Being smaller in all their parts, they can be planted much closer than those of other strains; they seem to be especially fond of moisture in summer time.

The propagation of hybrids of *primulinus* is the same as that of the other *Gladiolus*. Bulbs will reproduce true to shape and colour of flower, but seed will not; when raised from seeds they will always throw out plants which go back to the hybrid parent, and which must be rogued if the strain is to be kept pure.

Crosses have been tried with many other species than those named; *G. dracecephalus* and *G. Colvillei* were successfully used at Kew as far back as 1906, and the result is reported in the *Kew Bulletin* for 1911. But, as far as I know, these crosses did not give such good results as with garden hybrids.

It is probable that hybrid *Gladiolus primulinus* will be largely grown in England when it becomes better known. It meets, perhaps, more than any form of *Gladiolus*, the requirements of indoor decoration. *S. Mottet, Verrières le Buisson, France.*

NOTICES OF BOOKS.

THE FLORA OF LOWER CALIFORNIA.*

APART from a small collection of dried plants made by R. B. Hinds, of H.M.S. "Sulphur," at Cape San Lucas, Magdalena Bay, in 1839, and a further collection by Xantus, in 1860, from the same district, almost nothing was known of the botany of Lower California (and its outlying islands) when the *Botany of the Biologia Centrali-Americana* was written, 1879-1883. Consequently it was not included, although politically and geographically belonging to Mexico. Since then it has been more or less thoroughly explored, in parts, with highly interesting results, and the general character of the vegetation is now fairly well known, and the literature considerable. Among the contributors, all of whom are Americans, are Brandegee, Goldman, Greene, Mills-paugh, Orcutt, Palmer, Rose, Trelease, Vasey, and Watson. Professor T. S. Brandegee has made a special study of the vegetation of both Upper and Lower California, and of the outlying islands, and his most important contributions to

the subject have appeared in *Zoe* and the publications of the California Academy of Sciences. The main result of his investigations is the discovery that the endemic element in the outlying islands had been vastly over-estimated. This holds good for the Revillagigedo Group, distant about 250 miles from the nearest point of the mainland. There the endemic element is restricted to a few species of American genera.

The expedition to which Mr. Goldman was attached traversed Lower California from end to end, through ten degrees of latitude; the journey occupying ten months. Lack of time and transport difficulties limited the collection to the more important and conspicuous species, mainly trees and shrubs, and the plates represent a selection of curious and novel forms, mostly in landscape. These are supplemented by more or less copious notes on habit, situation, soil, climate, etc. Among the more interesting are the Pines and the Palms. Thus *Erythea Brandegeei* often grows in association with



FIG. 95.—*CAMPANULA CELSII* SHOWING DENSE HABIT OF FLOWERING.

(See page 218.)

Populus monticola. This Palm sometimes reaches a height of 120 feet, though the smooth trunks are less than two feet in diameter, and bend to the winds. (*Glaucotea* (*Erythea*) *armata* is shown growing in a very rough, stony country with other xerophilous plants.

Various species of *Nolina*, *Yucca*, and *Agave* are seen in their homes. *Dudleya Anthonyi* is a remarkable member of the *Craeseulaceae*, inhabiting rocks on the seashore. *Lysiloma candida*, allied to *Mimosa*, is economically one of the most important trees of the Peninsula, the bark being valuable for tanning. Some singular species of *Jatropha*, *Pedilanthus*, *Pachycornus*, *Fouquieria*, *Idria*, and numerous *Cactaceae* (10 plates) give some idea of the extraordinary character of the vegetation of the dry districts. *Burragia* and *Xylonagra* are showy shrubby genera of the Evening Primrose family. The fruit of the former is buried in the tissues of the flowering branches. *W. B. H.*

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

EVERGREEN CALANTHES.—These are not so conspicuous as the flowers of the deciduous group, but nevertheless the section is an interesting one. It contains the first hybrid Orchid to produce a flower, viz., *C. Dominyi*, and also *C. veratrifolia*, *C. japonica*, and *C. Masnea*. They will thrive in an intermediate temperature, and, being evergreen, are not subjected to any drying off. The re-potting is carried out when growth begins, and a similar compost as advised for *C. Veitchii* may be employed. The atmosphere ought not to be overcharged with moisture, or the leaves will be disfigured with black spot disease. The foliage should be sponged over occasionally to keep insect pests in check.

PHAIUS.—Many species and hybrids of *Phaius* develop their flower-scapes from March onwards. When the plants have finished blooming they may be re-potted. The different sorts of *Phaius* are valuable plants for decorative purposes, seeing that they may be employed in dwelling-rooms without harming them. This remark applies especially to certain of the Oak-wood hybrids, such as *P. Clive*, *P. Norman*, *P. Cooksonii*, and many of the secondary hybrids. A suitable compost is formed with good, turfy loam, leaf-mould, and sand, with a moderate sprinkling of coarse sand. Fill the pots one-fourth their depth with broken crocks for drainage, and over the crocks place a thin layer of fibrous loam. The plants are strong-rooting subjects, and need a generous treatment and ample pot room. Make the soil firm about the roots, and allow space on the surface for a layer of *Sphagnum*-moss, which, although not essential, gives the plants a smart appearance. Water the roots sparingly at first, but when they are established they need liberal supplies of moisture. Grow the plants in a warm, moist house; occasionally one meets with fine specimens that have been cultivated in plant stoves. It is necessary to shade the foliage from strong sunlight; indeed, a certain amount of shading is needed during the greater part of the year. Insect pests must be watched for, and especially thrips and scale. Scale is destroyed by sponging with an insecticide; thrips by fumigating.

PROPAGATION.—Stocks of choice plants can be increased by placing the old back pseudo-bulbs in pots filled with *Sphagnum*-moss; or they may be arranged in the propagating case, where they will form growing points. Directly these commence to root they may be re-potted, and grown in a warm, moist house. Seedlings will also need attention. Those that are large enough may be placed singly in small pots; but the smaller plants should be arranged in store pots or pans, as advised for other seedlings in a previous calendar. The compost is made of *O-munda*-fibre, or peat, and *Sphagnum*-moss in equal parts.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

TRANSPLANTING ONIONS.—Onions raised in January should be transplanted out-of-doors at the first favourable opportunity in deeply-cultivated soil. If the plants are in pots they may, if considered desirable, be set with the ball of soil intact. Those grown in boxes may be shaken free of soil and planted with the roots fully extended. The retention of the ball of soil is not so important a matter as preserving the roots from injury. With a little skill the whole of the plants may be turned bodily out of the box without injuring them. If this is done the roots may be disentangled easily, whereas lifting with a trowel may sever many of the roots. Make

* *Plant Records of an Expedition to Lower California* by E. A. Goldman. Contributions from the United States National Herbarium, XVI. 14, pp. 309-371, plates 104-133 and a sketch map. February, 1916.

the soil firm about the plants to cause them to grow perfectly upright. Fifteen inches in each direction between the plants is not an excessive distance to plant, with wider spaces at intervals to serve as alleys. Large pots or drain-pipes sunk at intervals in the bed will permit of underground watering in summer. This method will not only economise labour, but prevent loss of moisture through evaporation, which always follows surface watering.

SALSIFY AND SCORZONERA.—Salsify may be sown now. The plant grows best in sandy soil, in a cool situation. This crop may be grown in ground that is partially shaded, where most other vegetables would not be a success; moreover, in such a situation there is less risk of the plants bolting. On light soils sow in drills made 1 foot apart, and thin the seedlings subsequently to 1 foot apart in the row. In gardens where the soil is heavy clay bore tapering holes with a crowbar 15 inches deep and 1½ inch wide at the top. The holes should be 1 foot apart. Fill them with sandy soil, and sow several seeds 1 inch deep in each station. Scorzonera should not be sown until May or the plants will run to seed.

PARSLEY.—Make a successional sowing in drills 14 inches apart. Either thin the seedlings to 9 inches apart, or transplant them in a prepared bed. Choose rich, well-tilled ground, in an open situation. The earliest plants should be transplanted out-of doors after they have been hardened suitably. Allow a space of 14 inches between the rows and 12 inches between the plants in the row.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

CYTISUS IN THE ROCK GARDEN.—Cytisus *præcox* will soon be a mass of flowers. This beautiful flowering shrub is one of the showiest subjects in the rock-garden at this season. It shows to best advantage planted in groups of five or more in a drift rather than in clumps. Young plants, before they grow so thick as to form a mass, should be carpeted with purple Aubrietias; even the common purple Aubrietia raised from seeds give a pleasing appearance, but not so fine as the varieties Dr. Mules or Lavender. As the bushes grow and meet they may be in formally margined with these lovely flowers. As a change from Aubrietia the pale blue Phlox subulata may be chosen. Cytisus *kewensis* follows C. *præcox* in flower, the plants here being usually in bloom in the first week in May. This Broom may be associated with Viola *gracilis*, V. *cornuta* *purpurea*, or even Iris *pumila*. C. *kewensis* is more prostrate in habit than C. *præcox*. At about the same time as C. *kewensis* flowers the brighter and rather more prostrate C. *Ardoinii*. This plant shows up well on the upper parts of the rockery. I like to associate it with Armeria *Lauchiana*, though some object to this colour association. C. *purpureus* *incarnatus* is another beautiful Cytisus which may find a place in the rock-garden. This shrub commences to flower about the middle of May; whilst the white C. *leucanthus* (*schipkaensis*) flowers about the middle of June. Those who adopt the intensive system of spring bedding should grow a few plants of Cytisus *præcox* in pots, and plunge them among Myosotis as dot plants, or among any other suitable spring flowers.

EAST LOTHIAN STOCKS.—Plants raised from seeds sown early this year and pricked off in boxes should be transplanted well apart on a bed of sandy soil in a frame. They will provide fairly large plants for setting out in late May or early June, to follow the spring bedding. A few days before planting sever the soil between the plants with a turf knife to permit of lifting the roots readily. Prick them off from the seed box when very small into another box, and, as soon as they begin to crowd each other, pot them into 3-inch, and later into 5-inch, pots. Specimens grown in this way attain to a width of 18 inches, the central spike bears a foot of flowers, whilst the side growths, which develop after the main fruss, give as many as fifty spikes of bloom and bud at one time.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

GLOXINIA.—Gloxinia seedlings which were raised in February must be kept growing steadily in a fairly warm, moist atmosphere. Transfer them when large enough into 3-inch pots, using a compost of loam, leaf-soil, and sand. Later on they will require another shift into 5½ inch pots, in which they will flower. The earliest of the old plants will soon be showing their flowers, and as roots will now be plentiful, a little stimulant may be afforded. As the flowers develop, a cooler atmosphere will be conducive to a longer-flowering season.

GLORIOSA.—A few plants of this useful stove plant trained thinly over the roof in a warm house will provide plenty of flowers all through the summer. When in active growth the roots require an abundance of water, supplemented occasionally by a stimulant of some kind. In addition to G. *superba* there are richer coloured varieties, such as G. *Rothschildiana* and others.

RHODODENDRON INDICUM (AZALEA INDICA).—Remove the dead blooms when the plants have finished flowering, and re-pot plants that require this attention. They may then be placed in a warm, moist house to complete their growth. Indian Azaleas are very subject to attacks of red spider. As a precaution against this pest place the plants on their sides and vigorously syringe the leaves and stems with an insecticide.

FREESIA.—By careful treatment the old bulbs, which have just finished flowering, may be retained and flowered another season. Stand the pots on a shelf near to the roof glass in a cool house, and keep them well supplied with stimulants. When the bulbs are matured place the pots closely together in a cold frame and gradually dry the plants off. A large percentage of these old bulbs will flower again next year.

TUBEROUS-ROOTED BEGONIAS.—Seedling Begonias should be transferred to boxes filled with a mixture of loam, leaf-soil, and sand as soon as they are large enough to handle. Let the boxes be well drained. The young plants may be subsequently potted into 5-inch pots, in which they will flower.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warton Priory, Yorkshire.

STRAWBERRIES.—As soon as the fruits are picked, remove the plants to a cool pit or other place of shelter. If this be done, and attention given to watering until such time as the plants get hardened off, they may be planted out with good results. Attend to the thinning of fruits on succession plants as they advance. Support the fruits to prevent injury, and keep them clear of manure water. It will be necessary now, during bright sunshine and drying winds, to examine the plants morning and afternoon to see if they require water.

PLANTING VINES.—May is the best month for propagating vines from eyes, as the conditions afterwards are genial for growth and the ripening of the wood. Home-raised vines should not be grown in very small pots, as the roots soon become coiled. Those 7 or 8 inches in diameter are the most suitable. Another method is to insert the eyes in squares of turf and root them on a gentle hot-bed. Whichever system is adopted, correct temperature of the new border at the time of planting is the great secret of success. The border should be made in advance of planting, using fresh turf placed grass-side downwards, bone-meal, a little Thomson's vine manure, lime-rubble, and burnt garden refuse. The border need not be more than 3 feet in width at first. If the soil does not become warm by fermentation, the sun will soon warm it sufficiently, and, with a lining of Oak leaves, the most delicate vines will make rapid progress. Keep the atmosphere moist. Do not plant the roots too deeply; place a quantity of warm soil about them, and settle this by watering with warm water. A slight shade may be afforded for a day or two. Keep theinery close until the roots have grown in the new soil.

but air must be admitted if the temperature reaches 85° or 90°. In planting cut-back vines, disentangle the roots and spread them in every direction, covering them with 3 or 4 inches of soil, and watering as advised above. The distance at which to plant is a matter which must be determined by the grower, taking into consideration the length of the rafter and the mode of training to be adopted; they should not be closer than 4 or 5 feet. Planting super-numeraries to fruit a year after planting should not be practised in the same border, for there is a great temptation to allow these vines to remain longer than one year.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOLE, Eastwell Park, Kent.

BLACK CURRANTS.—Of late years the Black Currant gall-mite, or Big Bud, has made the cultivation of Black Currants a matter of great uncertainty, no variety, so far, having been found immune. Strong varieties, such as the Boskoop Giant, seem to hold out longer than some, but sooner or later all become infested. In the plantations in some localities, this pest has become so bad that the cultivation of the fruit has been almost abandoned; but where it has only just appeared, for the next six weeks this pest should be combated by every possible means. A continual watch must be kept for its appearance on hitherto uninfested bushes; if left unchecked, it will quickly spread through the whole plantation. Where the infested trees are old and making weak growth, it is advisable to grub them up entirely, and start with fresh bushes, as far from the old plantation as possible. The discarded bushes should be at once burnt, as, if left, they will infect any other Black Currants in the vicinity. If, on the other hand, the bushes are comparatively young and healthy, though suffering from a bad attack, they should be cut down almost to the ground level. The surface soil should then be removed, and new soil substituted as a top dressing. The old stools will quickly break into growth, and develop plenty of strong shoots; it will be a simple matter to watch these and pick off any big buds that develop on the young shoots. There must be constant vigilance in this respect; it is probably owing to the fact that measures for combating or preventing this disease are carried out in a half-hearted manner that the pest has spread all over the country. Pick off the big buds by hand and follow with a course of remedial treatment. The repeated use of a mixture of soft soap and quassia extract is strongly recommended by well-known market growers, and it must be carried out in a thorough and painstaking manner. The trees should be sprayed with the mixture in the proportion of two ounces of soft soap to four ounces of quassia extract, and a gallon of rain or softened water. Lime and sulphur dusted liberally over the bushes and on the ground around them may be adopted as an alternative, and in the present days of scarcity of labour it may be found to take less time than to apply the liquid specific. But whatever means are taken to get rid of the pest, it must be persevered with throughout the next six weeks.

FRUIT PROSPECTS.—The past winter has been a remarkable one in many respects. After a cold and frosty November, the next three months were extremely mild, and as early as February fruit-trees were making rapid progress. Early in March a change to very wintry conditions checked all growth, and for six weeks little progress was noted. Most of the trees are, however, now coming into bloom. Peaches and Nectarines are blooming well, but Apricots poorly. Plums and Cherries, both on walls and in the open, are flowering excellently, and Apples promise a good show. Except for certain varieties Pears look much under the average, many trees showing no bloom at all. Small bush fruits look promising. In cold and exposed situations, and in low-lying gardens, where there is greater danger of spring frosts, every effort should be made to protect the blossoms of choice fruit-trees. Strawberry plants are now starting into growth. The crowns look plump and healthy, and should flower well.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would oblige delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

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Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, APRIL 24—
Easter Monday (Bank Holiday). B.G.A. Annual Conference (London).

WEDNESDAY, APRIL 26—
Roy. Hort. Soc. of Ireland Show (2 days).

THURSDAY, APRIL 27—
Midland Daffodil Soc. Show, Birmingham (2 days).

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.2°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Wednesday, April 19 (10 a.m.): Bar. 8.7°; temp. 49.0°. Weather—Cloudy.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—
Hardy Bulbs and Lilies, Herbaceous Plants, Roses and Fruit Trees, at Protheroe and Morris's Rooms, at 67 and 68, Cheapside, E.C., at 12.

FRIDAY—
Herbaceous and Border Plants, Hardy Bulbs and Roses, at Protheroe and Morris's Rooms, at 12.

Shakespeare's Garden.

The tercentenary of the death of England's greatest genius falls on Easter Sunday, in a year when his countrymen need, more perhaps than in any other year since Shakespeare's death, the sustenance and stimulus of his great-hearted patriotism and love of country. Of these high themes, however, there is no need for us to speak; but we may join in the eulogious band with "the tribute of a flower that fades away" by recalling the ardour with which Shakespeare loved plants and gardens. It is, we think, no accident that among the parts which he is credited with having played is that of the old gardener, Adam, model of fidelity and sobriety.

"From seventeen years till now almost fourscore

Here lived I, but now live here no more.
At seventeen years many their fortunes seek;

But at fourscore it is too late a week."

Whether whilst still a comparatively young man, after he fulfilled that wonderful resolution, "I'll break my staff, and deeper than did ever plummet sound I'll drown my book," Shakespeare spent his later days in the gentle practice of gardening, we know not. But inasmuch as that pursuit has been the solace of many

of the world's greatest men, we may be sure that Shakespeare's indubitable love of plants and gardens found practical expression in the country home of his retirement. Of the genuineness of Shakespeare's love of flowers and gardens there can be no dispute. Unlike Bacon, who, to adapt Harvey's epigram upon him, "wrote upon gardens like a Lord Chancellor," Shakespeare loved the garden as an English cottager loves it, and his happiest speech when he speaks of gardens is that of a peasant to whom has come the inspired power to express that love in words. Yet Shakespeare, though he loved to speak of common things, and to show the shrewd observation of the working gardener, could when he chose describe majestically the royal garden, "the garden circummured with brick, whose western side is with a vineyard back'd." But his mind was stored with images of wild plants and semi-wild gardens, and from that inexhaustible treasure with the liberal nonchalance of genius he recalls the "bank of Violets stealing and giving odour";

"The pleached bower,
Where Honey-suckles, ripen'd by the sun,
Forbid the sun to enter";

and the "Woodbine coverture" wherein Ursula angles for Beatrice hid. None but a peasant could have had such an eye for everything pertaining to the garden and its cultivation. Witness the shrewd comment:—

"The Strawberry grows underneath the Nettle,
And wholesome berries thrive and ripen best,
Neighbour'd by fruit of baser quality."

Who shall say that the nuisance of self-sterility of fruit trees was not a commonplace of country knowledge in Shakespeare's day! He knew "the weeded garden that grows to seed," and the "dangling Apricocks" that someone had forgot to nail to the wall, and the shallow rooted weeds, "suffer them now, and they'll o'ergrow the garden." He knew, also, the whole art of pruning, "that bearing boughs may live," and grafting.

"You see, sweet maid, we marry
A gentle scion to the wildest stock,
And make conceive a bark of baser kind
By bud of nobler race."

He had seen in old, neglected, Midland gardens the Ivy strangling trees—

"The Ivy which hid my princely trunk,
And suck'd my verdure out on't."

And he forestalled us all on the subject of the winter rest and spring awakening of plants by his lines of immortal rhetoric:—

"This is the state of man: to-day he puts forth

The tender leaves of hope; to-morrow blossoms,

And bears his blushing honours thick upon him;

The third day comes a frost, a killing frost,

And, when he thinks, good easy man, full surely

His greatness is a-ripening, nips his root,
And then he falls, as I do."

Out of his bountiful, all-embracing knowledge Shakespeare has left us many curious problems which we shall never solve. Who shall say what Harlocks are, and who what plant is meant by "spear grass"? What are the weeds of King Lear and the plants which made the chaplet which Ophelia wore before she met her death where "a willow grows aslant the brook"? We know "mazes, forthrights and meanders," through which the "Tempest's" delightful, shipwrecked crew wended their way in the "enchanted isle" of the "still-vexed Bermoothes," but we know of the nature of the toothed Briers less than of the nurture of Caliban, and what had Iris in her bright eye when she spoke of "pioned and trimmed"? Some fanciful fellow thinks of Marigold, but in these days, when pioneers are digging manfully in Flanders, we cannot but believe that that fairy spirit spoke of the results of spade labour.

Albeit, there are other texts which have it:

"Thy banks with Peonied and Lilled
brims."

The foreigner, and particularly the egregious German, is fond of telling us that Shakespeare was not English because we as a race are so inarticulate, and cannot tell of the love of Nature that is in us; but we prefer to think that for once the feelings of the English peasant become articulate in a prophetic swan-song and found voice in Shakespeare. "Others abide our question, thou art free." It was no mere poet, but the spirit of all simple rustic, unsophisticated lovers of the country, who spoke with the voice of Oberon:

"I know a bank whereon the wild Thyme
blows,

Where Oxlips and the nodding Violet
grows,

Quite over-canopied with lush Wood-
bine."

The curious may find in the books, and particularly in Canon Ellacombe's *Plant Lore and Garden Craft of Shakespeare*, the innumerable evidences of Shakespeare's love and knowledge of gardens; but the best tribute they can pay is to take down more often than heretofore those volumes of pure magic, and find solace and delight in the matchless imagery of their pages.

"trees
Bow themselves when he did sing.
To his music plants and flowers
Ever spring; as sun and showers
There had made a lasting spring."

RED CROSS SALE OF PLANTS, FRUITS, CUT FLOWERS, BOUQUETS, HORTICULTURAL BOOKS AND PAINTINGS.—Fellows of the Royal Horticultural Society and others are appealed to for plants and bulbs, including Orchids, horticultural books, paintings, photographs, and Japanese prints, cut flowers, and bouquets, to be sold by auction on June 28 and 29, to help the funds of the Red Cross Society. Offers should reach the R.H.S. Secretary, Vincent Square, on or before May 27, in order that they may be duly entered in the catalogue, and the objects themselves must

reach Vincent Square early in the day on Tuesday, June 27. Cut flowers will only be sold on the Thursday, and must be brought on the same morning before 10 a.m. Plants growing in the ground will, of course, not be brought at all, but the donors of such will undertake to lift them at the proper season and pack them and despatch them to the purchaser, who will himself defray the carriage. Donors are particularly requested to give beforehand a short account of the plants they are going to send (especially if of any marked interest), for publication in the catalogue. Paintings of plants not in flower will, when available, be exhibited by the auctioneer. Donors are requested to lend such paintings, which will be returned if the name and address of the lender is written on the back of them. The committee reserve to themselves the right to refuse anything which for any reason they consider unsuitable. Donors should understand the importance of only sending things of some real value. Messrs. PROTHEROE AND MORRIS have most kindly offered their services as auctioneers. Lots purchased may, if the purchaser wish it, be returned to the auctioneer to be put up again. The entry list will close on May 27, in order that a full catalogue may be drawn up and printed for circulation on or about June 17. As the catalogue will, in itself, be an interesting and valuable souvenir of a unique occasion, it is suggested that all Fellows and others interested in the object of the sale should secure one or more copies of the catalogue, whether they are able to attend the sale or not. Any unable to attend may send orders to bid for them to the auctioneers. The catalogues may be obtained from Vincent Square, or from the auctioneers, at 68, Cheapside, E.C., at a price of 2s. 6d., post free. It will also be on sale at the door. Each catalogue will admit one person to the sale. Admission by catalogue only. Profits arising from the catalogue will be added to the proceeds of the sale.

RED CROSS SALE OF ORCHIDS.—On Friday, April 14, Messrs. PROTHEROE AND MORRIS conducted, on behalf of Messrs. ARMSTRONG AND BROWN, a sale of hybrids and other rare Orchids. One-half the net proceeds is to be handed to the Red Cross Fund, and, although the exact figures are not yet available, it is expected that a substantial sum will go to the fund. The sales included some remarkably healthy seedlings of new and rare Cattleyas and Laelio-Cattleyas. The prices realised were up to expectations. Mr. J. GURNEY FOWLER, chairman of the Orchid Committee of the Royal Horticultural Society, bought a few of the rarer plants, paying 42 guineas for a small Cattleya Mendelii Stuart Low, and 20 guineas for Brasso-Laelio-Cattleya Excelsior.

MR. BRIAN WYNNE.—We greatly regret to hear that Mr. BRIAN WYNNE, the well-known secretary of the Royal Gardeners' Orphan Fund, has suffered a sad bereavement in the death of his wife, which occurred on the 17th inst., at Feltham.

THE RED CURRANT.—At a meeting of the Linnean Society to be held on Thursday, May 4, Mr. E. A. BUNYARD will communicate a paper on "The Origin of the Garden Red Currant."

RHODODENDRON SULPHUREUM.—Under this name there is a very pretty dwarf-growing Rhododendron flowering in the greenhouse at Kew. It is a hybrid between *R. caucasicum* and a white-flowered *R. arboreum* raised in the Comely Bank Nurseries at Edinburgh about 1894. Whilst it flowers outside from the middle to the end of April, it may readily be forced into flower under glass during March or earlier. Dwarf and compact in habit, the delicate sulphur or pale-yellow flowers are particularly pleasing, this being a rare shade of colour among the hardy evergreen Rhododendrons. Another and possibly better name is Cunningham's Sulphur, especially in view of the introduction of a new species, named *R. sulfureum*, from China by Mr. G. Forrest.

"BOTANICAL MAGAZINE."—The following plants are illustrated and described in the issue for April:—

SOPHROLAELIA PSYCHE, tab. 8,654.—This hybrid was raised from *Laelia cinnabarina* and *Sophranitis grandiflora*, and is interesting because it bears so strong a resemblance to a *Laelia* as to be easily mistaken for a dwarf species of that genus. Only in the somewhat modified structure and colour of the flowers is the influence of *Sophranitis grandiflora* apparent. The petals and sepals are orange-yellow.

CLEMATIS PAVOLINIANA, tab. 8,655.—A native of Central China, and closely allied to *C. Meyeniana*. The specimen figured in *Bot. Mag.* was raised at Kew from seeds sent from the Arnold Arboretum in 1908, being some of those collected by Mr. E. H. Wilson in the

LUPINUS CHAMISSONIS, tab. 8,657.—This shrubby plant has been confused with *L. argenteus*, the Kew specimen which furnished the material for the *Bot. Mag.* plate having been purchased under that name. Its nearest ally is *L. albifrons*. The plant forms a small shrub; the leaves are bluish-grey and the flowers bluish-lilac, with a large, yellow blotch at the base of the standard.

ALNUS CORDATA, tab. 8,658.—This Italian Alder was described and illustrated in *Gard. Chron.*, March 3, 1883, under the name of *A. cordifolia*. It is an old garden plant in this country, its introduction dating back to 1820. Many large specimens exist in Great Britain, the finest is at Tottenham House, Savernake, Wiltshire, although the Kew specimen is slightly taller. *Alnus cordata* is recommended as an orna-



FIG. 96.—ROSE MRS. BRYCE ALLAN.

(Awarded a Gold Medal by the National Rose Society. See p. 226.)

neighbourhood of Ichang. The plant is evergreen, and is expected to prove hardy in this country. The sepals are white on the upper and green with a white margin on the lower surface.

EUCONYMUS BUNGEANUS, tab. 8,656.—The long leaf stalks are a distinguishing character of this species of Spindle tree, which is found in Manchuria and Northern China. As in the well-known *E. europaeus*, the aril is very ornamental, but, unfortunately, the tree has not fruited regularly in this country so far, and it cannot yet be stated whether it will prove so useful as its European congener. Specimens at Kew have proved hardy, and they have grown well in loamy soil.

mental tree for growing in damp places, such as the margins of ponds and streams, and it makes a good town tree.

LADIES' COMMITTEE OF THE R.H.S. ALLIES WAR RELIEF FUND. The Ladies' Executive Committee, which has already been successful in raising a sum of nearly £2,000 for the relief of horticulturists in allied countries, desires to call the attention of the committees of local horticultural societies to the claims which this fund has on the support of horticulturists in this country. The organisation of the fund for each country is in the hands of the lady presidents, and it is suggested that, as has been done already in not a few cases, part of the proceeds of flower shows

and exhibitions might be set aside for the benefit of this fund. Secretaries of horticultural societies who are willing to render assistance to the Ladies' Committee are asked to communicate to the secretary, R. H. S., Vincent Square, who will supply them with all particulars. The total subscriptions to the R.H.S. Allies War Relief Fund amount to £7,000, and it is hoped that during the present summer this sum may be largely augmented.

PRESENTATION TO A GARDENER.—Mr. GEORGE JOHNSON, who has held the position of head gardener to Lord BURNHAM, at Hall Barn, Beaconsfield, for the past twelve years, is now leaving to take a similar position at Milton Hall, Stevenage, Berks. Whilst at Beaconsfield Mr. JOHNSON occupied the post of lieutenant in command of the local special constabulary, the members of which made him a presentation on the 13th inst. as a memento of his work.

GREY SQUIRRELS.—Several enquiries have recently been made respecting the introduction of the grey squirrels into one or two public parks and private estates. This is probably due to seeing them at Kew and Regent's Park, where the little grey animals attract considerable attention from visitors. While some points may be advanced in their favour, it must be said that they do a considerable amount of damage in gardens if present in any appreciable numbers. Recently at Kew they cleared in a very few days the flowers of the yellow Crocus growing under the Cedars near the Japanese Gate. It would be interesting to know exactly what part of the flower attracts them. Presumably the anthers or honey secreted at the base, as the petals are nipped off and left on the grass. At present they are very busy upon the buds of several large horse Chestnut trees, the ground beneath the trees being littered with the outer scales. Their partiality for Pine cones and nuts of all kinds is well known. Another fancy is the fruits of Crataegus in autumn. One of their strangest acts is to apparently sharpen their teeth on the lead labels attached to the trees, some of which they disfigure. It is interesting, though in some respects regrettable, to note that where the North American grey squirrel is introduced the brown English squirrel soon disappears.

SUGAR BEET.—The importance of increasing the acreage under Sugar Beet is urged in an article in the current number of the *Journal of the Board of Agriculture*. At present the amount of this crop grown in the neighbourhood of the Norfolk factory at Cantley is not sufficient to keep the factory running at full pressure. Since 1912, when the factory was started, the Sugar Beet supplied to it has averaged 20,000 tons per annum. Four times this amount is required if the cost of production of sugar is to be reduced to its lowest level. During last year the supplies of Beet were obtained from 2,150 acres, and the crops yielded an average of just over 9 tons of washed roots per acre, with the good sugar content of 17.36 per cent. The average return per acre was £14 and the average cost of cultivation £10 16s. It is urged, in favour of a wider cultivation of Sugar Beet, that the necessary work of subsoiling, cleaning and manuring the land benefits subsequent crops; that the tops are rich in potash, and when ploughed under are of considerable manurial value, that it yields valuable by-products, the pulp constituting a useful feeding-stuff, and the molasses also being at present of considerable value. Moreover, the Sugar Beet has a high value for feeding purposes, so that farmers, even if situated too far from the factory to send the Beets thither, are advised to try a few rows among their Mangels in order to learn at first hand the treatment and uses of the crop. Those farmers who would like to do this may obtain 3lb. of seed for 1s. Postal Order (post free) on application to the offices of the Anglo-Netherlands Sugar Corporation, Cantley, Norfolk.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE PLANTS' AWAKENING (see pp. 134, 148, 176).—In the interesting notes on frost and the awakening of plants by Mr. Brotherton, and the more general view of the periodicity of plant growth and its connection with the mnemonic theory, by J. B. P., little mention has been made of bulbous plants. Such plants would seem to provide exceptional opportunities for observation and experiment, since they have well defined periods of rest and growth. Moreover, their times of "awakening" being so varied, and less obviously dependent on conditions of temperature and moisture than with less specialised plants, we may expect to find fresh evidence to test the probabilities of the mnemonic theory. J. B. P. (p. 148) maintains that the mnemonic hypothesis affords, and can afford, no explanation at all of the response of plants to seasonal changes, and advises us, in effect, to eschew theories and collect facts—carefully and systematically. But is it not just one of the chief uses of theories that they assist us to collect facts systematically? J. B. P. deprecates the attempt, which he attributes to the mnemonic hypothesis, to explain phenomena (physical facts) in terms of psychology. This seems hardly a just representation of the theory, which seeks rather to find a common generalisation which shall include both physical and psychological phenomena; and we may be sure that if successful it will not be the physical facts that are explained by psychology—but the other way about. The immediate causes of the activities of plants are to be sought, of course, in the region of chemistry and physics, in the reactions of the chemical constitutions of the plants to physical conditions. The mnemonic theory takes that for granted, but it is not specially concerned with the immediate causes. What it seeks to explain is how each particular plant, or variety, or species came to have that distinctive chemical constitution, which uniformly responds at more or less definite periods to more or less definite conditions. With more reason objection might be taken to the idea of engrams, which are assumed to be stored up in the germ cells, to explain how these constitutions or habits may be acquired. For we cannot say precisely what is the nature of an engram, except that it is the record or trace of a stimulus left on the protoplasm of the cells, and that something of this nature must exist in the case of nerve and brain cells to explain memory. But, in any case, it is a purely physical conception, and in no wise comparable to the assumption of a "directive vital force" or suchlike ultra physical explanation, and it seems at least both simpler and more general than Weismann's hierarchy of determinants and ids and idants and biophores, all packed into the nucleus, which is the only serious alternative. In the North-eastern districts of Natal there is a little Amaryllidaceous plant—a *Cyrtanthus*, I think—known to the settlers as the "Fire Lily," because it appears and flowers immediately after the grass is burnt off. It has, of course, no connection with the burning of the grass, except that the grass is usually burnt off at the end of the winter and just before the rains are expected. Nevertheless, the flower appears above the ground often before any rain has fallen. It is the same with many other South African bulbous plants—the smaller *Gladioli* and other *Iridaceae* and *Amaryllidaceous* species—when the rains are two or three weeks late, and it is significant that very many of these plants are small, and it is essential for them to flower quickly before the grass grows up again. Larger bulbs—some, at any rate—such as *Belladonna Lilies*, are in no such hurry, and do not flower till long after the first rains have come. On the other hand, there are some bulbous plants, such as *Dieramas*, which are in moist or even wet ground all the year round, yet they, too, die down and grow up again at definite periods. Here the conditions are comparatively simple and uniform—six months dry, six months wet, and no very great range of temperature throughout, and the facts may be interpreted as the result of chemical reactions which have been taking place during

the six months of rest producing a substance, or a modification of the chemical constitution of the bulb, which reacts towards the end of the period of rest to stimulate the roots and flower-stem to grow again. But this is no explanation of the phenomena as a whole, the problem still remains: How have these plants acquired this special character or habit so definitely adapted to the South African conditions? If there is no causal connection between them, we are thrown back upon Weismannism and the fortuitous variations of the germplasm. But if there is a causal connection between the environment and the constitution, what is wanted is an explanation of how it acts, and the great interest of the mnemonic theory is that it offers a promise of such an explanation, based widely, if indirectly, on facts. It involves the inheritance of acquired characters (not necessarily in one generation, or in ten thousand—but ultimately), and it is admitted that there is no direct or definite evidence for it. But neither is there any conclusive evidence against it. We should then keep an open mind, and to condemn the mnemonic theory on that account alone would clearly be unscientific. But though it is natural to wish to understand something of the working of the process as a whole, the investigation of the immediate causes is very necessary spade work, and full of interest, too, and the deeper we look into the matter the more complex we find even these isolated problems are. As the South African conditions may seem comparatively simple and uniform, let us return to our own incomparable climate, and to such more familiar instances as the Tulips and Daffodils of our gardens. These go to rest at a time when other plants are at their fullest growth, and start to grow again when the latter are at the end of their growth. This suggests that the outward conditions (environment) cannot be so all-important—cannot be the essential determining factors, since they have opposite effects on different plants. Evidently the more important factor is the constitution or character of the plant—its specialisation. Daffodils are especially interesting, as there are two species or subspecies with very distinct habits with regard to this periodicity of growth. As is well known, the Trumpet varieties have a much more definite period of rest than the Poeticus varieties. The roots of the Trumpet Daffodils die off entirely, and do not start again for two or three months. Poeticus varieties, on the other hand, are in a more or less chronic state of rooting, the new roots starting before the older lot have died. But besides the period of rooting there is the time of the appearance of the leaves above ground, and there is no apparent connection between the two. For the Poets, though they root "early and often," do not appear above ground until some time after the longer-resting, later-rooting Trumpets. Among the varieties both of Trumpets and Poets there are, again, wide variations—the self-yellow Trumpets generally appearing before the Bicolor and White Trumpets, while there is a difference of three weeks or more between the appearance of the earliest Poets, *Ornatus* and *Praecox*, and the late *Recurvus*. And these differences, though fluctuating with the season, are relatively very definitely fixed and appear to be true *time-habits*, independent of the temperature, any attempt to force *Recurvus*, for instance, resulting in the flowers going blind wholesale. The special chemical constitutions, by which, in interaction with external conditions, these variations of habit are determined and kept constant, must be very delicately balanced. No doubt they are correlated with the conditions in the native country of the species or varieties from which our garden plants are derived, and they must be sorely tried—and, indeed, outraged—by the vicissitudes they encounter only too frequently on these alien shores. It is a tribute to the strength of the cardinal principle upon which the mnemonic theory is based—to this power of repetition to create a tendency in an organism to go on doing uniformly any action that has been repeatedly performed, in a word, to the power of *habit*—that not all the buffeting they endure can make these *Narcissi* swerve, save temporarily, from their established routine. And, after all, we should not be surprised, for habit, as in animals, or those parallel phenomena

in plants which are so strikingly manifested in these definite growth periods, is but the expression in living organisms of that *inertia* in "dead" or inorganic matter which is the fundamental basis of the laws of motion and energy and of the ultimate constitution of matter. A. J. Bliss.

NOSEGAY PELARGONIUMS (see pp. 175, 188, 212).—J. F. is mistaken in some of the remarks he makes on page 212. Donald Beaton left Shrubland Park in 1851, and the finest of his strain of Nosegays—Lady Middleton—was raised from seeds four, or at most five, years earlier. He assumed that this variety would never be surpassed. The brief notes I offered on p. 174 were only a very incomplete summary of the history of the race, and Beaton and other writers indicate that other parents than *Pelargonium inquinans* and *P. Zonale* contributed to the strain of their day. Errington, of Oulton Park, mentions *P. cuculatum* as an early parent, but he and others write rather uncertainly on the point. I am not sure, but, writing from memory, I think Mr. William Bull put the Stella race on the market. Christine was not a Nosegay, and was raised at the date given previously. Like Cannell's Master Christine, it was a great seeder, and I believe that the "Master" prefixed to the last-named indicates its superiority to the older variety, and is analogous to the French "Surpasse." In the 'forties MacIntosh, of Dalkeith, furnished beds with varieties which attained 10 and 12 feet in height. The "Unique" strain of which Rollisson's Unique had a long period of popularity, was very tall in growth, and one regrets that this and other fine strains have been lost to gardens owing to the exigencies of fashion and space. Doubtless there will be a return to *Pelargoniums*, both for garden furnishing and for pot culture, once a new generation becomes impressed with their qualities, or someone like Donald Beaton keeps hammering away, in and out of season, at the gardening reading public, with the *Pelargonium* as his chief text. R. P. Brotherston.

CHAMOMILE, WILD AND CULTIVATED (see p. 207).—I was surprised to read the statement of your correspondent, A. R. Iforwood, that Chamomile (*Anthemis nobilis*) is now rare, although at one time common. Possibly he may refer to it as a cultivated plant. It is certainly not rare in Surrey, in the wild state. I first gathered it on Reigate Heath, in 1884, and since then have come to the conclusion that it is seldom absent from any village green or common in the county where the turf consists of short grass. It is particularly plentiful on the flat lands to the south of the North Downs, and frequent on the northern commons almost to the banks of the Thames. I found it colonising the grass in Kew Gardens some years ago. Surrey is also the county in which it is grown as a cultivated plant for medicinal purposes. At Mitcham, however, it is (or used to be) only the double variety, *A. nobilis flore pleno*, that is favoured. So far as I have seen it, this double variety is a very variable plant. Sometimes all, or nearly all, of the disc florets are furnished with a ligule or ray; at other times, or on other plants, the rays are few and scattered irregularly over the head. My first acquaintance with Chamomile was in the 'sixties of last century, when many old people grew their own medicinal herbs. *Anthemis nobilis* was planted in rows and carefully tended during the summer by old and old-fashioned farmers and cottagers or their wives, mostly the latter. This was certainly the single form, and the full-blown flower heads were the part of the plant gathered and dried on trays or close sieves in the sun. Oil of Chamomile is distilled from the whole plant at Mitcham, sometimes from the flower-heads only. *A. Cotula* and *A. arvensis* are also fairly plentiful to the south of the North Downs in Surrey; but the first named is so acrid and offensive in smell that it could scarcely be used as a substitute for *A. nobilis*. *A. tinctoria* turns up as a casual in various parts of the country, but is not native. Pale-coloured varieties of it are common in gardens and nurseries. *Matricaria Chamomilla* or Wild Chamomile more nearly resembles true Chamomile than any of the previous three, and has been used for mixing with it. I think *Matricaria suaveolens* would be even better for this purpose. J. F.

SOCIETIES.

ROYAL HORTICULTURAL. Scientific Committee.

APRIL 11.—*Present*: Messrs. E. A. Bowles, M.A. (vice-chairman), J. Fraser, W. Hales, A. Worsley, H. J. Elwes, J. Allard, A. D. Cotton, Sir Everard in Thurn, Dr. A. J. Voelcker, and F. J. Chittenden (hon. sec.).

Seeds of Pyracantha Lelandii germinating in fruit.—Mr. J. Fraser showed fruits of *Pyracantha Lelandii* containing germinating seeds. The fruit had but recently been picked.

Partial virecence in Chrysanthemum Parthenium.—Mr. A. Worsley brought capitula of *Chrysanthemum Parthenium* in which the bracts had become foliose. In many cases the pale flowers were to be seen among the bracts.

Narcissus cunariensis.—Mr. Elwes said that in his garden this form of *Narcissus* usually flowered in autumn, but some had been lifted and flowered early in spring after drying off, while Miss Willmott found it to flower normally in spring at Warley (whether after lifting or not was not stated).

A Light Wood.—Dr. Voelcker showed a specimen of wood under the name of Balsa wood, from Brazil. It is exceedingly light, a cubic foot weighing only about 7lb., whilst a cubic foot of cork weighs 13lb. Mr. Elwes suggested that as it was so soft it might be useful for making setting boards and so on for insects, and even for making pith helmets. Sir Everard in Thurn stated that in British Guiana it was used to float the heavy logs of greenheart from the forest down the river.

Action of caustic soda on soil, etc..—Dr. Voelcker also reported that he had examined a vine sent him recently which had been killed by caustic soda being poured upon its roots. The action upon the soil was very peculiar, the general effect being to produce a sticky mass.

Narcissus with divided corona.—Messrs. Carter, Page and Co. sent a *Narcissus* which for the second time was producing flowers with the corona deeply divided into six segments almost equal in size to the perianth segments, opposite to them, and lying upon them.

Heredity in Campanula.—Mr. T. B. Grove, Wyndley Nurseries, Sutton Coldfield, sent an account of his observations upon the characters of a hybrid *Campanula*. The F₁ generation was raised by crossing *C. carpatia* White Star ♀ with *C. Tommasiniana* ♂. The seed of a selfed hybrid was sown in September, 1914, and fifty-nine seedlings were raised. They showed segregation along the following lines (where the total does not correspond with 59 the discrepancy is due to two plants having failed so far to flower). Plants tall like ♀, 29 (10in.-20in.), dwarf like ♂, 30 (4in.-9in.); white, (♀), 39, blue 18 (♂); flower large (1½in. upwards), 30, small (½in.-1in.), 27; flower broad or flat (♀), 44, narrow or tubular (approaching ♂), 13; foliage broadly ovate (♀), 49, inclined to lanceolate (approaching ♂), 10; inflorescence much branched, 32, little branched, 25 (a point difficult to distinguish); with few long branches, 21, with many short ones, 36; free flowering, 43, not free flowering, 14. The numbers in the last two pairs of characters are subject to revision. The figures seem to indicate that the pairs of characters are in many cases not simple ones, but probably combinations of more than one.

SHOW OF DAFFODILS.

APRIL 18.—The meeting of the Royal Horticultural Society on Tuesday last was mainly an occasion for the annual display of competitive Daffodils. All the other committees sat, but the poor attendance at the Orchid and Fruit Committees seemed to show a reluctance to steal honours from the April flower. As a matter of fact, the Daffodil Show was the best the R.H.S. has yet held. There were more entries, and the exhibits displayed such high quality that surprised even the specialists. There were many novelties of outstanding merit, but owing to the practice of exhibiting many of these under numbers merely, nothing would be gained by giving detailed descriptions of flowers at present unnamed. Were we to offer any criticism of the excellent show it would be

from the public point of view, on the ground that as at present constituted the exhibition appeals too exclusively to the specialists, and brings to the notice of visitors chiefly varieties of Daffodils that are not yet procurable, or are so expensive as to be outside the means of ordinary people. More classes should be added to the present schedule having the object of presenting standard varieties so arranged that they would appeal to the general public. The attendance was exceedingly disappointing, which is another indication that something more is desired to make the show as generally attractive as could be wished.

The Floral Committee recommended three Awards of Merit to novelties, including a very interesting species of *Primula*, *P. nutans*, from Western China.

The Narcissus Committee recommended four Awards of Merit to varieties of Daffodils.

Floral Committee.

Present: Messrs. H. B. May (chairman), C. T. Druery, Sydney Morris, R. Hooper Pearson, J. F. McLeod, J. W. Moorman, W. Howe, R. W. Wallace, C. R. Fielder, J. Heal, T. Stevenson, J. Dickson, C. Dixon, A. Turner, C. E. Pearson, W. P. Thomson, E. Jenkins, W. Cuthbertson, J. Green, W. J. Bean, Jas. Hudson, and G. Reuthe.

AWARDS OF MERIT.

Androsace Laggeri Warley variety. A brightly-coloured form of the Pyrenean *Androsace Laggeri*, and dwarfier than the type plant exhibited for comparison. The deep-rose-coloured flowers of the novelty are exceedingly rich in tint.

Armeria caespitosa.—The Spanish Thrift, a well-known plant in gardens. The specimens shown were in pots, and they were flowering profusely; the heads of pale pink blooms are not more than 1 inch high. Both these were shown by Miss E. WILLMOTT.

Primula nutans.—A Chinese species, with deliciously fragrant flowers; the plant exhibited was raised from seed collected by Mr. George Forrest. The scape is about 9 inches high, and forms at the top a short, umbellate spike of clear lavender-blue, bell-shaped blossoms. The individual flowers are like those of *P. sikkimensis* in shape; the flower stalk and calyces are mealy, and the exterior of the flower is dusted lightly with farina. The leaves are oblong-cordate, and like those of the common Primrose. Shown by Messrs. R. WALLACE AND CO.

GROUPS.

Medals were awarded for collections as follows:—

Silver-gilt Banksian Medal to Messrs. B. R. CANT AND SONS, Colchester, for Roses; *Silver Flora Medal* to Messrs. J. PIER AND SONS, Bayswater, for alpinas, and Messrs. J. CHEAL AND SONS, Crawley, for flowering shrubs. *Silver Banksian Medal* to Messrs. H. B. MAY AND SONS, Edmonton, for Clematis, Hippeastrums and Ferns; Mr. W. MILLER, Wisbech, for hardy flowers; and Mr. F. PRICHARD, Christchurch, for Alpinas. *Bronze Flora Medal* to Mr. E. HICKS, Twyford, for Roses. *Bronze Banksian Medal* to Messrs. BLACKMORE AND LANGDON, Bath, for Polyanthuses; Messrs. R. GILL AND SONS, Falmouth, for Rhododendrons; Messrs. STUART LOW AND CO., Enfield, for Carnations; and Mr. G. RETHE, Keston, for hardy plants.

Orchid Committee.

Present: Sir Harry J. Veitch (in the chair) and Messrs. Jas. O'Brien (hon. secretary), Pantia Ralli, T. Armstrong, R. A. Rolfe, and W. H. White.

At the previous meeting a report was circulated that there was to be no Orchid Committee meeting on April 18; hence the small attendance of the members of the committee and paucity of exhibits.

AWARDS.

PRELIMINARY COMMENDATION.

To *Odontioda Brackenhurst* (Oda. Charlesworthii × Odm. eximium), from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells. The small plant bore one perfectly shaped flower of a bright rosy-red colour, the broad lip with yellow crest being darker.

OTHER EXHIBITS.

H. J. ELWES, Esq., Colesborne, Gloucestershire, showed an inflorescence of *Phaio-Cymbidium* (hardwarense) (*P. grandifolius* × *C. giganteum*), with yellow flowers, the lip marked with red-brown. The cross has been frequently commented on as not showing the *C. giganteum* parentage, but in the case of *Zygopetalum Mackayi* crosses there is a similar lack of evidence in the hybrids.

E. MOCATTA, Esq., Woburn Place, Addlestone (gr. Mr. Stevenson), showed a plant of *Laelio Flaviona* (flava × Iona), which had been purchased under the erroneous name of *Sophro-Laelia* Sunray.

MESSRS. ARMSTRONG AND BROWN, Tunbridge Wells, showed seedling *Odontoglossum Promerens* var. *Xanthotes*; the flowers were pure white with a few yellow spots, and *Odontoglossum Erzerum* (*Fascinator* × *crispum* Luciani), bearing one very large and perfectly formed flower with large red-brown blotches, the segments of which had a white base and broad white margin.

Narcissus Committee.

Present: Messrs. E. A. Bowles (chairman), W. F. M. Copeland, G. Reuthe, J. D. Pearson, A. Wilson, G. W. Leak, C. Adams, E. M. Copeland, F. H. Chapman, F. Barchard, P. R. Barr, H. Backhouse, W. Poupard, J. Jacob, E. Willmott, R. W. Wallace, H. Smith, and Chas. Curtis.

AWARDS OF MERIT.

Narcissus White Pennant (show).—A Leedsii variety belonging to (a) class in the Society's classification list. The flower is of fine form and has a cream-coloured crown, set off by a beautiful perianth of clear white segments. Shown by Messrs. R. H. BATH, LTD.

N. Phyllida (show).—A Leedsii flower with beautiful funnel-shaped crown of primrose-yellow. The perianth is cream-coloured; the crown is 1½ inch broad at the top and as much in depth.

N. White Pearl (show).—A medium-sized Leedsii variety with beautiful, ivory-white cup or crown.

N. Corol (show).—A Triandrus hybrid of medium size. The trumpet is pleasingly frilled on the rim and shows up well against the regular white perianth. These three were shown by Mr. W. F. M. COPELAND.

GROUPS.

The following medals were awarded for collections of Daffodils:—

Gold Medal to Messrs. BARR AND SONS, King Street, Covent Garden; *Silver-gilt Flora Medals* to Messrs. R. H. BATH, LTD., Wisbech, and Messrs. J. CARTER AND CO., Raynes Park; *Silver-gilt Banksian Medals* to Messrs. J. R. PEARSON AND SONS, Lowdham, and Mr. C. BOURNE, Bletchley; *Silver Flora Medal* to Messrs. DOBBIE AND CO., Edinburgh; *Silver Banksian Medals* to Messrs. R. SYDENHAM, LTD., Birmingham, and Mr. C. A. JARDINE, Balham.

Competitive Daffodil Classes.

The class for a collection in 48 varieties representing the different sections of Daffodils was exceedingly well contested. A very fine exhibit was shown by Mr. A. M. WILSON, Bridgwater, who was awarded the 1st prize. Every vase in this collection contained blooms of remarkable quality, of large size, yet refined in appearance, and the colours well developed. Many were shown under numbers only. Of the named varieties we enumerate *Igerna*, *Croesus*, *Midas*, *Durbar*, *Robespierre* and *Grenadier*; 2nd, Mr. C. BOURNE, Bletchley; 3rd, Messrs. F. HERBERT CHAPMAN, LTD., Rye.

Twelve Trumpet Varieties. Messrs. BARR AND SONS, King Street, Covent Garden, showed the better of two exhibits, comprising excellent blooms of *Tamora*, *Justicia*, *Queen Helen*, *Golden Sovereign*, Mrs. G. H. Barr, *Oakhurst* and others; 2nd, Mr. A. M. WILSON, with *Diogenes*, *Seborga*, *Grenadier* and several seedlings shown under numbers.

Twelve Incomparabilis Varieties. Mr. WILSON was awarded the 1st prize for good blooms of *Robespierre*, *Ozan*, *Croesus*, *Fleetwing*, *Duessa*, *Durbar*, *Best Man* and several seedlings; 2nd, Mr. C. BOURNE.

Twelve Barrii Varieties.—Mr. WILSON was

placed 1st in this class, the chalice colouring in most being of bright shades of red and orange. Many were numbered seedlings. No. 73 had a band of orange-red clearly defined from the golden basal part, and was a particularly fine flower. 2nd, Mr. C. BOURNE, Bletchley, with very neat flowers of *Cirelet*, *Lady Moore*, *Jaspar*, *Eschscholzia*, *Cresset* and others. 3rd, Messrs. H. CHAPMAN, LTD.

Nine Leedsii Varieties (a).—In this class, for flowers having a large crown or cup, known as *Giant Leedsii*, the Rev. J. JACOB, Whitechurch, showed good specimens of such sorts as *Lowdham Beauty*, *White King*, *Christella*, H. C. Bowles and *Thora*. 2nd, Mr. A. M. WILSON. This latter competitor was awarded the 1st prize in the class for *Triandrus*, *Cyclamineus* and *Jonquilla* hybrids. His exhibit included magnificent *Triandrus* seedlings of deep gold colour.

Mr. W. F. M. COPELAND, Shirley, Southampton, showed the better of two exhibits of *Tazetta* and *Tazetta* hybrids, Mr. WILSON being placed 2nd. Messrs. H. J. CHAPMAN, LTD., were the only exhibitors in the class for *Poeticus* varieties, and were awarded the 1st prize. Mr. COPELAND showed the only collection of double *Daffodils*, and received the 1st prize.

SECTION II.

AMATEURS' CLASSES.

There were corresponding classes to the foregoing for amateurs, but for fewer flowers. The standard of quality was fair. There was only one exhibit in the group class, and the 3rd prize was awarded.

Six Trumpet Varieties.—1st, Rev. THOS. BUNCOMBE, Black Torrington, Devon, for bold blooms of *Bangora*, *Weardale Perfection*, Mrs. H. Veitch, *Juliana*, *Treasure Trove*, and *King Alfred*; 2nd, Mr. R. MORTON, Woodside Park.

Six Incomparabilis Varieties.—The 1st prize was won by Mr. R. MORTON, Whitewell, Great Warley, *Bernardino* and *Lady de Bathe* being the best blooms; 2nd, Mr. H. B. DARLINGTON, Potters Bar, who had smaller flowers of very refined appearance.

Six Varieties of Barrii.—Mr. DARLINGTON excelled with *Fair Maid*, *Eyebright*, *Firebrand*, *Cirelet*, *Incognita* and *Sunrise*; 2nd, Mr. R. MORTON.

Six Leedsii (a).—1st, Rev. THOS. BUNCOMBE with *White Slave*, *Phyllis*, *Evangeline*, *Diana*, *Candidata* and *Oenone*; 2nd, Mr. DARLINGTON.

Mr. R. MORTON had the best *Poeticus* varieties; Mrs. RIDLEY, Wincanton, the best *Triandrus* hybrids; Mr. DARLINGTON the best *Tazetta* and *Tazetta* hybrids; and Mr. MORTON the best double *Daffodils*.

SECTION III.

Miss V. WARREN, Westbere, showed the best collection of 12 varieties representing the different divisions; *Pearl of Kent*, *Lowdham Beauty* and *Bernardino* were very good; 2nd, Mr. W. B. CRANFIELD.

There were thirteen classes following for varieties in the sections as defined in the society's classification list.

Mr. W. B. CRANFIELD won 1st prizes in the classes for three varieties, Ia; three varieties, Ib; three varieties, Ic; three varieties, IIa; three varieties, IVa; three varieties, V.

Mrs. E. V. BUTLER, Tewkesbury (gr. Mr. A. J. Collins), excelled in the class for three varieties, IIb, and three varieties IX; Miss WARREN for three varieties IIIa and three of X; Fr. G. CHURCHER for three varieties, IIIb, and three varieties, VIII; Mr. G. STOCKS, Doncaster, for three varieties, IVb.

The *Engleheart Cup* was awarded to Mr. P. D. WILLIAMS, Lanarth, St. Keverne, for twelve varieties not in commerce, and this collection was by far the best in the show. All the flowers were shown under numbers. No. 730 (a *Barrii* approaching *Incomparabilis*) had a flat, intensely coloured chalice and pale sulphur perianth; 335, *Incomparabilis*, deeper cup, orange-red in colour and perianth of perfect shape; 101, *Jonquil*, fine golden flowers with greenish centres; 971, *Giant Leedsii*, a grand flower of primrose-yellow trumpet and ivory-white segments; 422, a *Leedsii* variety, with

over-lapping perianth, the back segments almost meeting; and 524, a fine bicolor with intense yellow trumpet and magnificent perianth. Capt. HAWKER, Exeter, showed the best six varieties not in commerce; *Carthage*, *Sicily*, *Idris* and *Hafiz* were the best blooms. He also showed the best single variety in the yellow trumpet *Sicily*. Messrs. BARR AND SONS showed the finest novelties of *Triandrus* hybrids.

Mr. WILSON showed the best twelve varieties raised by the exhibitor, all but two under numbers; 2nd, Rev. J. JACOB. Other 1st prize winners in the seedling classes were Messrs. F. H. CHAPMAN, LTD. (six varieties), Mr. C. L. ADAMS, Wolverhampton (three varieties), and Mr. P. D. WILLIAMS (three varieties), representing Divisions I, II, III, IV, or IX.

Fruit and Vegetable Committee.

Present: Messrs. P. C. M. Veitch (in the chair), Geo. Woodward and Owen Thomas.

The only exhibit was a collection of vegetables exhibited by Messrs. SUTTON AND SONS, Reading, for which a Silver Knightian Medal was awarded. Heads of *Snow-White Cauliflowers* were model specimens, and there were other good *Cauliflowers*, *Lettuces*, *Cabbages*, *Cucumbers* and other kinds.

NATIONAL ROSE.

APRIL 14.—Of all the exhibitions of the special floricultural societies, those of the National Rose Society seem to be the most successful. For many years past, the summer and autumn shows have been increasingly popular alike among growers, amateurs and visitors; and the institution, some years ago, of a spring show has amply justified the enterprise of the committee. The exhibition took place on the 14th inst., in the R.H.S. Hall, Westminster. Long before the hour fixed for opening, large numbers of Rose-lovers had already assembled, and there was a constant stream of visitors throughout the afternoon.

It was not to be expected that the show would be quite so large as in normal times; but there were ample exhibits in all the sections.

It is to be remarked at all Rose shows that the chief interest invariably centres round the novelties displayed. On this occasion there were several new varieties; one received the Society's Gold Medal, and another an Award of Merit. The Gold Medal was awarded to a Hybrid Tea variety named Mrs. Bryce Allan (see fig. 96), shown by Messrs. ALEXANDER DICKSON AND SONS, Newtownards, who contributed the majority of the new seedlings. This beautiful and fragrant pink Rose somewhat resembles *Gladys Harkness*. In form, it is all that can be desired, as will be seen from the illustration. The growth and foliage are very strong, and being also free in flowering the variety may be expected to prove useful in gardens as well as for exhibition.

The Award of Merit was made to a variety named W. C. Gaunt, a fine, scarlet-crimson flower with much substance of petal. The outer petals are pleasingly pruned; and although there are other Roses of the same shade of colour, this variety will doubtless be of value in collections.

Of the other novelties, Donald McDonald is cerise-rose, a fine, glowing colour; but it seemed to have too few petals, and the flower was rather small. Clarence Goodacre is a Hybrid Tea variety resembling a pale *Sunburst*, the petals being ivory-white, shaded with lemon. Lady Sydney Eardley Wilmot, shown by Mr. ELISHA HICKS, Twyford, is a dwarf Tea, with ivory-white petals; it may become popular as an early variety, but the plant has the appearance of being a rather poor grower. Mr. HICKS also showed a number of plants of his new variety, Mrs. George Norwood; it is one of the most fragrant Roses of recent times, though the colour makes no particular appeal. Mr. WALTER EASLEY, Eastwood, Essex, showed a very promising H.T. variety, named *Madame Colette Martinet*, one of M. M. Pernet-Ducher's seedlings. The colour is a shade of golden-apricot, after the style of *Lady Hillingdon*; the bloom is fuller than that of *Lady Hillingdon*, and has more of the habit of Mrs. Aaron Ward.

With regard to the competitive classes, the honours were equally divided between the professionals and the amateurs. The amateur growers were numerically inferior, but the blooms shown by Mr. HAMMOND and Mr. HOLLAND were equal to the best in the whole show. Several classes were provided for groups, and good exhibits were staged. Messrs. HOBBS, LTD., Dereham, and Messrs. PAUL AND SONS, Cheshunt, competed in the most important class, and the 1st prize was awarded to Messrs. HOBBS, LTD. A new variety of the Frau Karl Druschki type, known as Lemon Queen, was included in Messrs. HOBBS' group: the petals are ivory-white, so that the name is somewhat of a misnomer. That tantalising variety, Juliet, was also well displayed; it is a fine Rose at its best, but the colours are seldom perfectly developed in summer. Other notable varieties were Queen Mary, a bloom of rare colouring, gold and carmine passing with age to shell pink; Melody, a fine bloom of a pale apricot tint; and Coronation, a satiny-pink flower.

Sunburst, in Messrs. PAUL AND SONS' exhibit, looked best in the bud stage, the scarcely unfolded petals revealing a delicate shade of apricot on the inside.

On the exhibits of Rambler Roses in pots, Messrs. PAUL AND SONS' Sodenia in Class 5 bore a wealth of fine clusters of bright carmine double flowers. Mr. GEORGE PRINCE, Oxford, and Mr. ELISHA HICKS contributed two good groups of pot plants and cut blooms in Class 2, arranged on the floor of the hall. Mr. PRINCE's exhibit, which was adjudged the better of the two shown, included Irish Elegance, Austrian Copper, and Austrian Gold, three single Roses of especial merit.

Messrs. B. R. CANT AND SONS, Colchester, had the field all to themselves in the class for a group of pot plants and cut blooms arranged on staging. Their exhibit was awarded the 1st prize. The variety Augustus Hartmann was conspicuous in the group for the brilliance of the colour—a scarlet sheen on the upper surface and rose underneath. Of the new Roses shown by Mr. ELISHA HICKS in Class 7, one of the best was Edith Part.

CUT BLOOMS.

Messrs. B. R. CANT AND SONS won easily in the class for 36 blooms in not fewer than 24 varieties. The Gold Medal Rose in the nursery-men's section was included in this exhibit, the variety being Mrs. Edward Mawley. Messrs. FRANK CANT AND CO. obtained the 2nd prize. Mr. HICKS was successful in obtaining the 1st prize in the class for 18 blooms in 12 varieties. Mrs. Foley Hobbs, Madame Jean Dupuy, Maman Cochet, W. R. Smith (a very pale yellow Rose), and Mrs. George Shawyer (pink) were all well shown, and of more than average quality; 2nd Messrs. G. and W. H. BURCH, Peterborough.

The variety Gustav Grunerwald figured conspicuously in the group of six distinct varieties in vases shown by Messrs. F. CANT AND CO., which obtained the 1st prize in Class 12. Florence Pemberton, although of fine exhibition size, looked rather coarse, especially as regards the outer petals.

In the class for three baskets of cut Roses, Mr. HICKS showed his delightful new single crimson-scarlet variety, Princess Mary. This variety deserves special mention, as it fulfils all the requirements of a first-class single Rose.

AMATEURS' CLASSES.

The amateurs' section contained two of the best exhibits in the whole show—namely, those in Class 20, for 12 cut blooms in no fewer than six varieties. They were contributed by Mr. E. J. HOLLAND, Sutton, Surrey, and Mr. G. A. HAMMOND, Burgess Hill. The judges found it impossible to make any distinction between them, and awarded them equal 1st prizes. In Mr. Holland's exhibit were Mrs. Foley Hobbs, Mrs. E. Mawley, Florence Pemberton, and Mme. Jules Gravereaux. Mr. Hammond showed the best Rose in the amateurs' classes in William Shean, and he had others of almost equal merit in Mrs. Foley Hobbs, Mrs. E. Mawley, and Florence Pemberton. Mr. HOLLAND won 1st prizes in four other classes, and Mr. HAMMOND in one.

NATIONAL CHRYSANTHEMUM.*

(Continued from page 215.)

SELECTION OF TYPES FOR CROSSING.

It is a difficult matter to arrive at positive facts in crossing, owing to the involved parentage of our present varieties, and one can only guess at possibilities. I will endeavour to give a few hints that may be of value.

In choosing possible parents there are four chief factors to consider—namely, colour, form, size and habit. Habit is perhaps of the first importance, for no matter how excellent otherwise, a seedling without a desirable growth would be of little value. Before casting out a seedling of defective growth, it is as well to be certain that the defect is not caused by lack of care in its cultivation. Although so important, habit is the easiest point to improve. If a strong variety has been crossed by a weaker, and a seedling results good in all but growth, it should be crossed back with its strong parent, and probably the fault would be eradicated in the next generation, and one of the resultant seedlings show the desired colour. There is no doubt that this crossing back should be practised much more than it is. The work of many excellent crosses is undoubtedly thrown away because the seedling from the first cross (that is, the F_1 generation does not come up to the standard required). But the same F_1 may carry the potentialities of both its parents, either latent or masked by some stronger factor.

Size appears to be a fairly definite factor, if some care is taken in estimating the value of the parents. The double varieties, that are consistently full on the last buds, will probably give seedlings approximating nearly to the parents; it may be a little above or below the mean of the two. The singles appear to vary a little more. Both for habit and size, it will soon be found by the raiser that some varieties give much more definite results than others, and the Mensa family occurs to me as an instance. Once having found one or two of these, it would be as well to stick to them, working in a little fresh blood now and then. If one could but find a few sorts that would breed true each year, a notable advance would be made, and the raiser's work be less costly.

Of form I cannot say anything definite. With some varieties a few are like one or other of the parents, but others appear to give every variation under the sun. Unless fresh types are desired, parents such as these should not be crossed again, as it is only waste of time.

Colour is the most difficult factor of all. Some raisers may tell you that they know what they will get from a certain cross, but frankly I should not believe it. They may know what the probabilities are, but that is all, for at present there is no certainty. What can one make of the following? Two fairly definite varieties when crossed gave no fewer than 27 shades of colour, from palest fawn to crimson red, with almost as many differences in form. Undoubtedly certain varieties are more potent than others, as I stated in regard to habit and form, and these should be used freely. It does not appear to matter which way the cross is made, except for this reason—that a weakly variety (this does not mean a starveling) will not produce seeds so freely as a stronger one. It is curious to see a seedling sometimes that shows no likeness to its seed parent; for instance, seedlings of Godfrey's Crimson crossed on to Heston White showed not the least resemblance to the latter, all taking after the pollen parent. December Pink crossed on to Heston White showed similar results.

I do not think it is much use crossing the more delicate shades together, as an art shade is often compounded of several colours, and crossing two such shades would give rise to many "wasters." Cross a delicate colour with a stronger by all means, and then cross back to the original, but stop short at that. A red crossed by a yellow, a red by a white, and a red by a pink, I find give good results, and in some cases two pinks of fairly definite colour do well; but it is very difficult to estimate probabilities in pinks, for they may, and often do, have some other colour latent which will show in the first cross. Whites

*Lecture delivered before the National Chrysanthemum Society by Mr. Percy Cragg.

and yellows are the most dominant colour factors, according to my experience. A yellow crossed on to white will usually give a good proportion of whites. Two yellows will sometimes give whites. A yellow single, selfed, gave me sixteen yellows out of eighteen plants; the same yellow and Celia gave 30 yellow, 5 pink, 6 bronze, 3 white and 3 red. One White, selfed, gave 5 whites out of 7, and another 10 out of 14, so these show fairly well for colour dominance. Elfrida, an apricot-bronze, selfed, gave 14 colours out of 18 seedlings, showing the variability of beautiful shades.

There is one other dominant result I have noticed. Each time I have crossed a crimson on to a white all the progeny have been pink of some shade or other. The first cross I ever made—Crimson Pride on to Queen of the Earlies—gave all pinks, from blush to rose-pink. Heston Pink, for instance, is the result of Heston White crossed on to Improved Lady Beaumont, and the other seedlings of that cross were of a deep shade of pink.

In singles, the tendency seems to be, and rightly so, I think, to divide very decidedly the varieties that will disbud from those that will not, and perhaps it is advisable to work on these lines, and more definite results will thus be attained. "Strength of petal" is here a deciding factor as to the utility of any novelty, and floppy ones should not be crossed. Those with slightly rolled petals, as a rule, pack and travel well, and last well on the plant or in water. Sandown Radiance has been the parent of many good varieties, although it gives a large percentage of inferior plants.

I am a great believer in selfing the more complex colours if derived from a fairly dominant type. I selfed Portia in 1913, and it gave me a wide range of colour. Besides other shades there were 1 pink, 2 magenta, 4 yellow, 5 bronze, 4 red and 1 white. Just what one might expect, except the magenta and the white.

I have no experience of the large doubles. There remains the Anemone type; here I think we have one of the most interesting classes of all to deal with. I believe the anemones have a great future. It will be of no use to go back to the old varieties, and for this reason: The anemone factor appears to be a very strong one, and to use varieties that already have this factor highly developed only defeats its own object, because the centres would be too crowded to be of use, and the "guard petals" would be forced out of line. If one could go back to the intermediate stages, the result might be good, not otherwise. So I think it better to make a fresh start, and it is surprising how easy this can be done. Aphrodite and Ceres, the varieties that obtained awards last year, owe nothing to any previous Anemone forms. Aphrodite was worked up in about three generations. Irene Cragg, a seedling of Mary Anderson, showed slight traces of Anemone form, the corolla points being white. Red Star came from Irene Cragg and Aphrodite from Red Star. Any variety that shows a change of colour from the normal yellow or green disc floret appears to hold the Anemone factor, Chesnut Beauty, for instance, and two such varieties crossed would perhaps give one or two pure Anemones of the Aphrodite type and many intermediate forms. The intermediates crossed on to the Anemones, or the latter selfed, would show improved forms. Red Star crossed with M. Patching gave all anemone seedlings.

From the results I have seen of Anemone varieties I do not think we shall desire flowers with full cushions again, the more lightly arranged and flatter centre being preferable.

I find there are many interesting breaks of form in the intermediates; one seedling of last year attracted my fancy greatly. The centre consisted of straight white slender tubes of Rayonnante type with five tiny, dark green, turned back points, each floret well separated from its neighbour at its apex—a most unusual and attractive form. I hope to see these new types come before the Floral Committee of the N.C.S. for award.

There is perhaps one point I should emphasise, and that is, if good results have been obtained from one cross, that cross should be repeated again and again until all likely combinations have

been extracted. For successive crosses of the same varieties are equivalent to many seedlings from one cross.

THE DISCUSSION.

Mr. Thos. Stevenson said that although he had not the time or opportunity to raise many seedlings, he was interested in the results of other growers' labours, and was of the opinion that even though it were possible to start with the original species, it would not be possible to produce on Mendellian lines such beautiful varieties as we now possess. He agreed with the lecturer that excellent results were obtained when the progeny of a cross between a strong and a weakly habit were crossed back on the strong parent.

Mr. Harman Payne remarked that the practice advocated by Mr. Cragg of producing seeds on cut Chrysanthemums was undoubtedly older than many supposed, and was probably practised by Salter, but the speaker had a distinct recollection of the late Mr. Robert Owen obtaining seed in this manner at Maidenhead, for he found a drier atmosphere and higher temperature than are usually found in Chrysanthemum houses to be essential to pollen production and successful fertilisation. He reminded the meeting that the Chrysanthemum came from the Far East as a perfect double flower, the product of probably thousands of years' cultivation by the Chinese gardeners, and that the early varieties were sent to Europe in the old China tea ships.

WOMEN'S PATRIOTIC BUREAU.

MARCH 31.—A meeting on the subject of women and farm labour was held under the auspices of the Women's Patriotic Bureau (acting secretary Mrs. Robert Harrison) at the Town Hall, Kensington, on the 31st ult. The chair was taken by Lady Wantage, and T.R.H. Princess Christian of Schleswig-Holstein and Princess Marie Louise of Schleswig-Holstein were present. The speakers were Miss Gladys Pott, Mr. Christopher Turnor and Mrs. Boyce.

In her opening address Lady WANTAGE said that victory depended as much on the work done at home, and especially on the land, as on the field of battle. People were coming to realise this more than they did a year ago. In this great emergency women were called upon to play their part, and it was to be hoped that when peace had been secured we should be able to look back with pride upon the work done by women for their country.

MISS GLADYS POTT gave a description of the mission to the Champagne district of France, in which she had taken part in February of this year. The mission had been undertaken under the auspices of a committee known as the Berks Committee on Women Farm Labour. This committee had formed itself in January, 1915, to cope with the demand for women's labour then commencing, and had arranged for the training of a certain number of women in the rudiments of farm labour. The committee worked on these lines through 1915, and in December reports of their work having reached the ears of Lord Selborne he called for representatives of the committee and asked them to extend the scope of their operations and to take a register of the names of all women in the villages coming under their purview who were willing to undertake to assist local farmers. This was done, and the committee further extended their work by establishing a panel of women lecturers on the subject of farm work. The mission to France was undertaken with the sanction of the Board of Agriculture and Board of Trade, through whom the necessary passports were obtained, and consisted of a number of women accompanied by the professor of French from University College, Reading. The weather during the visit of the mission to Champagne was very bad, but the members of the party were able to glean a good deal of information as to the methods in use, and learned from the industry and bravery of the French women (in whose hands the agricultural industry of France was now practically left) the three-fold lesson of thrift, courage and perseverance.

Mr. CHRISTOPHER TURNOR said that in comparing agricultural conditions in France and in England, it must be remembered that there was

a very great difference between the two countries. In France over 50 per cent. of the total population was agricultural, whereas in England the proportion was rather under 20 per cent. Owing to our neglect of the land in the past the agricultural population tended to decrease rather than to increase. In no other European country was this the case, as on the Continent the danger of such a tendency was well known, and was combated by every possible means. Since the beginning of the war we had partially learned the lesson of the great importance of the soil, but not completely. In Continental countries the yield of the soil increased year by year by leaps and bounds. It was said by some people that a nation could not be a great industrial nation and at the same time important from the point of view of soil production; but this position was disproved by the example of many European nations, notably by that of Germany. Indeed, it might be truly said that industrial prosperity could only be maintained by agricultural prosperity. If we in this country were to recuperate quickly after the war the land must be put to its greatest use. We should have to concentrate our attention on increasing the agricultural population. We had got the land; we had got the people; what was needed was to induce as many people as possible to settle on the soil, and in this respect a great deal might be done by training women to perform the work on farms. It was said by some that women could not be expected to do agricultural work and, at the same time, keep their homes in order; but in Sweden the household work was all done by 7 a.m., the women worked on the fields for some hours, and early in the afternoon had completed all their tasks for the day. In all the plans to be made for increasing the food supply it should be remembered that, at any time, facilities for importing wheat might be interrupted, and it was the duty of those in authority to see that this country grew as much of her own food as could possibly be extracted from the soil.

Mrs. BOYCE gave it as her opinion that one of the chief difficulties in the way of introducing women into agricultural pursuits was the prejudice of the farmer against female labour. This was, however, being slowly overcome, and it was hoped that in time it would cease to exist. At present there were not nearly sufficient facilities for the training of women for the land, and it was to be hoped that the Government would provide ample opportunities (as was now the case in Canada and other colonies) for such training. It had been objected that much of the work was too hard for women to do, but it was certainly no more strenuous than many of the games, such as hockey, played by educated women.

Obituary.

LIEUT. ERIC GUY SUTTON.—We learn with deep regret of the death in action of Lieutenant Eric Guy Sutton, second son of Mr. Leonard Sutton, Mayor of Reading. The late Lieut. Sutton was educated at Rugby, and on leaving school spent a year in France, and then proceeded to a tour in America, preparatory to entering the firm of Messrs. Sutton and Sons, at Reading. He returned home on the outbreak of war, joined H.M. forces, and was gazetted to the Royal Sussex Regiment in September, 1914. In the spring of last year he went to the front, and at once showed such ability that he gained his lieutenancy in the following June, as recorded in these pages. Lieut. Sutton received the Military Cross for conspicuous gallantry on the night of September 12, 1915, near Arras. Together with another officer he entered a mine which was in a highly dangerous state, owing to the gas fumes following an explosion, in order to rescue a man who had been overcome. Their prompt action undoubtedly saved the man's life. He received the decoration at the hands of the King at Buckingham Palace on February 23 of this year. Lieut. Sutton returned to the front in May, and had been almost continuously in the fighting line. Three of Mr. Leonard Sutton's sons are serving, and two of them are at the front. No words can express the sorrow of those who knew Lieut. Sutton. Young and full of life, alert, and possessed of a rare charm, the war showed yet

another side of his character. His natural gaiety proved itself to be, as oftentimes it is, the manifestation of a brave heart "that looks on tempests and is never shaken." His ready courage made high duties easy, and empowered him to do noble things with quiet confidence and strength. All that can be said in the vain desire to solace the sorrow of his friends and to help his father and his relations to support their grief, is that he did his duty like an Englishman, and he died for his country. Grief for his death and poignant regret at the shattering of such promise must always remain; but so also will remain the shining memory of a youth who was equal to the sternest call that fate may make of man; who, though his days were brief, won imperishable honour.

ANSWERS TO CORRESPONDENTS.

APPLES DECAYED: *Rhu*. The affection of the Apple is known as Bitter-pit, the origin of which is unknown. There is no fungus or insect present.

ASPARAGUS DISCOLOURED: *C. G.* The discoloration is caused by a lack of iron in the soil. Sprinkle a small quantity of sulphate of iron, in crystals, not powder, on the soil at intervals, and the colour will gradually be restored.

BORDEAUX MIXTURE FOR VINES: *Regular Reader*. It would not be worth your while to make at home the small quantities of the specifics you mention which would be required for your purpose. Both can be obtained in powder form from any sundriesman, with directions for use.

FIG SHOOTS INJURED: *A. C. H.* The Fig tree is affected by the disease known as "Fig-tree canker." You should cut away and burn all diseased portions at once, as the disease is very infectious. It is often spread by pruning diseased and healthy trees with the same knife, and this should therefore be avoided. Take the precaution also of dressing all cut surfaces with tar immediately after removing the diseased portions.

PEACH BLOOMS FAILING TO SET: *Reader*. If the trees suffered from want of water and were infested with red spider before you had charge of them, the trouble is not your fault, especially seeing that subsequently you followed the advice we gave on p. 110. Lift the roots of the other two trees at the end of September, and incorporate a fair amount of old lime-rubbish with the soil. Keep the trees clean and well supplied with water, especially during the autumn.—*W. S. Fowler*. It is not necessary to employ fire-heat in late houses where the trees are allowed to break into growth naturally, unless the nights are frosty or the atmosphere cold and laden with moisture, but a little warmth from the hot-water pipes is of the greatest service in keeping the atmosphere dry to ripen the pollen and keep the petals dry. Your treatment of the trees previous to flowering appears to be correct; the paraffin emulsion does not seem to have injured the bloom, although January was late to apply this specific, as the buds must then have been on the move, seeing that the trees were in bloom in February, which is too early for a cool house. The cause of failure appears to be the unusual atmospheric conditions which prevailed in February, as, without proper ventilation and sun-heat, it would almost be impossible for the pollen to become dry. Retard the trees as much as possible another season by keeping the ventilators open night and day, except in very severe weather.

PUFF BALLS ON LAWN: *Fungus*. Soak the ground thoroughly with a solution of sulphate of iron—one pound of sulphate to one gallon and a half of water. Apply the dressing again at the end of a fortnight, and once again after a like interval.

TULIPS FAILING: *J. P.* There is no disease present in the Tulip bulbs. For some reason not apparent, the bulbs were insufficiently strong to develop the flowers.

Communications Received.—A. C. H.—W. E. B.—H. W. B.—F. W. K.—S. A.—R. M.—C. B.—G. W. R.—T. C. E.—H. R. D.—H. M. V.—F. P.—H. J. E.—W. B. H.—E. M.—H. E. D.—W. E. B.—W. I.—E. L. C.—G. A.—E. A. B.

THE

Gardeners' Chronicle

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DAFFODILS FOR THE HOUSE.

I WROTE last spring of Daffodils for the garden, laying stress on the value of the self yellows and Leedsii forms, somewhat to the disparagement of the red cups; but when we regard our Daffodils less from the point of view of their effect in the garden and more from that of their value for picking and bringing indoors, we shall give a wholly different value to the red-cupped forms. To a certain extent, the qualities we should seek in Daffodils for picking and arranging in vases will correspond rather closely with those appreciated for exhibition. Not entirely so by any means, for in our own homes we are not restricted to the orthodox three blooms in a vase beloved by schedule makers, nor to vases of a certain size. These latter we may vary to suit the flowers we gather, and we are able to adapt the number of our flowers, and the method of their arrangement, to the effect we wish to produce.

In this article I do not wish to say much of those Daffodils that sell at fancy prices, but rather to notice some which are becoming popular and obtainable at prices within the reach of people of moderate means.

The season of flowering is an important matter for our purpose. The length of flowering period of the individual varieties may vary from a fortnight to three weeks for the earlier sorts to a week or ten days for the later ones. Much, no doubt, depends upon the weather, but in a normal year, by a judicious selection of varieties, we may have Daffodils to cut out-of-doors for nearly three months, from about the third week in February to the third week in May, though it is true that for the last fortnight of this period only the old *Poeticus recurvus* and its double form can be relied upon. Most people know that in a general way the Trumpet Daffodils open first and the *Poeticus* varieties last, while the others come in between; but it is useful to know more than this, for there is often nearly a month between the flowering of the earliest and latest of the *Incomparabilis* group.

The first Daffodil to flower out-of-doors is *Pallidus praecox*. I have known this to open as early as the last week in January, and as late as March 7. It is a pale yellow and graceful form, and everyone should grow a good batch on account of its earliness. The little *N. minimus* flowers about the same time, but is rather too small for picking.

A fortnight or three weeks later come three good yellow Trumpets, *Golden Spur*, *Henry Irving*, and the *Tenby* Daffodil. The first two are noticeable for their deep yellow tone, and *Henry Irving* and *Tenby* for their erect habit and stiff perianth; the latter quality greatly adds to their usefulness for decoration. These will be followed a little later by *Maximus*, still one of our best-coloured forms, and *Outpost*, a sturdy yellow Trumpet. All the foregoing are good garden flowers, and it is their earliness that makes them useful for gathering rather than their special merit for this purpose.

In the third or fourth week in March we may expect two early white Trumpets, *Alice Knights* and *Mrs. Thompson*. Both these white forms show themselves to much greater advantage when gathered and arranged in water than they do in the open. *Alice Knights* is a lovely little flower, and may be regarded as filling a similar place among the early white Trumpets to that occupied by *Mme. de Graaff* among the later ones. A few days more will show us the first *Incomparabilis*, *Artemis*, *Queen Bess*, and *Commodore*, the first two bicolors and the last a rather hooded flower, which is very distinct.

About the last week of March or the first week of April we begin to get the first of the red cups—*C. J. Backhouse*, *Sparkler*, and *Blackwell* (*Incomparabilis*); and *Southern Star*, and perhaps *Sunrise*, among the *Barrii* forms.

Practically all these red-cupped varieties are best when gathered and brought indoors, where, if kept from direct sunlight, they will flower and show their brilliant colouring for a much longer time than they would do if left in the open. All these forms (except Trumpets) are best if gathered and brought indoors before the flowers actually open. In order to secure the best results it is important to gather the flower at the right stage of its growth. The flower-stem at first grows straight upwards, but shortly before the flower opens the head bends over at right angles to the stem. The precise stage in which to gather these flowers is when the head has bent right over and the flower has burst its sheath, but not yet expanded. As soon as they are gathered they should be plunged up to the neck in water, and the vases placed in a cool position, not in direct sunlight, nor, if it can be avoided, in a room where gas is burned; and the flowers should be permitted to open slowly. When treated in this way the flowers will continue to grow in water for some time, and the colour will develop perfectly. If the flowers are picked before this stage is reached they are apt to come undersized, while if left much later the colour is apt to suffer somewhat.

Of the flowers I have named, *C. J. Backhouse* has a very brilliant cup, but the perianth is weak, so it will be well to arrange some five or six in a vase in order to get the colour effect without inviting too minute criticism of the individual flower. *Sparkler* is like *Sir Watkin*, a little coarse, but useful for its earliness; *Blackwell* is the best of the three, though the colour is not so brilliant; *Sirius* is a flower of the same character, with a brilliant cup, but not so good a back as *Blackwell*; *Southern Star* has a bril-

liant red cup; and *Sunrise* is one of the most striking. The flower is well formed, with a very bright and beautiful cup, and some of the orange from the red cup seems to have escaped into the whitish perianth segments.

Within a few days of these we shall get *Cardinal*, a rather dwarf grower, with a very pretty soft orange-scarlet cup, and glaucous green foliage so profusely produced as almost to hide the flowers in the garden, and *Lucifer*, which, albeit that the perianth is a little weak, is one of the most striking flowers among the red cups. The cup is a brilliant orange-scarlet—the colour pervades the whole cup, not merely the edge—and has great lasting power for a flower of this line. The perianth segments are nearly white.

Lady Margaret Boscawen is a big bicolor, the cup a good yellow, and the segments white. A vase of five or six of these flowers is very handsome, and they last particularly well in water. *Seagull*, also with a yellow crown and nearly white perianth, looks well in a vase, as does *Albatross*, which is a very similar flower, but with red in the rim of the cup; it is usually a few days later than *Seagull*.

By this time there will be no lack of yellow and bicolor Trumpets, perhaps too numerous to name, but among the former *King Alfred* (the most stately of Daffodils), *Sir Francis Drake* (which I always regard as a smaller edition of *King Alfred*, but easier to grow), and *Monarch* will be found useful; whilst *Alsace*, the first of *Poetaz*, will be usually in flower.

The Leedsii section will also be opening, beginning, as a rule, with *White Countess* and *Selene*, followed by *Minnie Hume*, *White Queen*, and *Mrs. Langtry*. These give us a considerable choice in the matter of arrangement. Those of the giant section, such as *White Queen*, will usually look best with few flowers in the vase, as they are a little stiff, while the old-fashioned forms, such as *Mrs. Langtry* and *Fairy Queen*, are so graceful that several may be placed together, well spread out in extended order.

Soon after the middle of April we shall find two most effective flowers for gathering in *Eye-bright* and *Incognita*. They are both now placed in the *Barrii* group, but *Incognita* has the larger cup of a soft reddish-orange, which is most pleasing. *Eye-bright* has, at first glance, a greater resemblance to the *Poeticus* group, with its small, bright red cup and shining white perianth. *Fair Maiden* opens about this period, which, though placed in the *Barrii* group might equally well have found a place among the Leedsii section, the perianth being white and the crown pale yellow. It is a particularly charming flower, well formed and pleasant in colouring, like *Pilgrim*, producing a very cool and restful effect. About the third week in April we shall find *Evangeline* and *White Lady* opening their flowers. These are two of the best of the Leedsii section, alike in the garden and in the house. The flowers are particularly graceful, carried on long stems, and the bulbs increase rapidly. *Evangeline* has the larger cup of the two. *Dew-drop* and *Easter* are small-sized flowers of great delicacy and beauty, belonging to the same section, and they are useful for small vases. *Dew-drop* has a faint tinge of pink in the cup, while *Easter* is particularly perfect in shape of the flower.

By this time the *Poeticus* section are beginning to open. The first, as a rule, is *Poeticus praecox*, but *Chaucer*, a small flower, with a bright cup, is little behind it. These are followed by *Virgil*, one of the finest of the group,

Ornatus, Horace, and, later still, Epic, which carry on the season till it ends with recurvus and its double form. I should notice, however, a very late Leedsii in Bianca, and a red cup variety named Aftermath, which are both pleasing flowers and useful for the time at which they open. Emerald, a Barrii with a tinge of green in the centre, is also among the latest of the garden Daffodils to open in my garden, often not being in flower till May has well begun.

Of recent years the Daffodil season has been lengthened by the introduction of late-flowering novelties, and perhaps it would be well if some of our raisers would devote attention to advancing the season for us to some extent. A few Daffodils of good form for gathering to fill in the gap that usually occurs between Pallidus prae-cox and such early Trumpets as Tenby and Henry Irving, would be very welcome.

This gap has been emphasised this season, the cold weather of March having kept back the flowers that would, in many springs, have opened during that month, and April has brought them and others all out together. *Empress*.

NEW OR NOTEWORTHY PLANTS.

NEW BALSAM POPLARS.

ABOUT a dozen Balsam Poplars are known, constituting a distinct section of the genus *Populus*, characterised by leaves whitish or pale beneath, with petioles rounded or quadrangular in section, and viscid buds, exuding a fragrant odour. In the black Poplars the leaves are of the same green tint on both sides, with a peculiar broad, well-defined translucent cartilaginous margin; and the petioles are compressed laterally.

The commonest Balsam Poplar in cultivation with us is *Populus canadensis*, Aiton, which is one of the earliest trees around London to come into leaf. It is readily distinguished by the marked pubescence of its twigs, petioles, and leaves: the last are broadly ovate, cordate at the base and ciliate in margin. This Poplar is known only in the female sex, and its native country is uncertain. It is often called the Ontario Poplar, and is supposed to be a native of Eastern Canada and New England, constituting a form of the North American Balsam Poplar (*Populus balsamifera* var. *canadensis*). Sargent, who adopts this name, states, however, that he has seen no wild specimens, and that "it does not appear to be indigenous in New England or Eastern Canada, where the pistillate plant has been used as a shade tree from very early times, as it has been in the Middle States and in Europe." His figure of the staminate catkins in *Silva of N. America*, IX., 169, t. 491 (1896), is admittedly an error. Dame and Brooks, *Trees of New England*, 37 (1902), assert that "trees of both sexes are found by collectors in New Hampshire and Vermont; while in Central or Southern New England the staminate tree is rarely, if ever, seen." L. H. Bailey some years ago described* a grove of these trees which formerly existed at South Haven, Michigan, and Gates† in 1912 states that the sand dunes of the West Coast of Michigan, north of Waukegan, are surmounted by narrow groves of *P. canadensis*.

The explanation of these conflicting statements appears to be that (1) *P. canadensis* is only known in America as a female tree always planted, and (2) that other trees have been mistaken for it by Dame and Brooks and other writers. It is these latter trees that I am now about to describe. See fig. 97.

The true *Populus balsamifera*, Linn., is the sole Balsam Poplar wild in the northern parts of North America, where it has a wide range,

from the Mackenzie River and Labrador, south to Maine, Vermont, New Hampshire, New York, Michigan, Minnesota, and Dakota. The typical form has glabrous leaves, ovate-lanceolate (considerably longer than broad), and narrowly rounded or obtuse at the base; twigs glabrous, but petioles with a slight pubescence. A distinct form, known to me from Chateauguay in Canada, Michigan, and Maine, has been named *P. Michauxii*, Dode; but it is best to regard it as a geographical variety, the complete distribution of which has yet to be made out. This is now accordingly named *P. balsamifera* var. *Michauxii*, A. Henry.‡ It differs from the type in the ovate leaves with a broad, rounded or subcordate base, and slight pubescence on the midrib and veins beneath; petioles and twigs are

As the black and Balsam Poplars in cultivation form hybrids, some of which, like *P. certinensis* and *P. generosa*, are beautiful trees, it is not surprising to find in North America a tree the parents of which are *P. deltoides* and *P. balsamifera*. This hybrid, of which I have specimens from Canada, collected by J. G. Jack, and from South Haven, Michigan, gathered by L. H. Bailey, will now be named *Populus Baileyana*, § A. Henry (*Populus deltoides*, L. var. *monilifera*, A. Henry × *P. balsamifera*, L.). It is intermediate between the two parents, and, judging from the branch photographed (fig. 98), is vigorous in growth. It is characterised as follows:—Twigs rounded, glabrous, with scattered, elongated lenticels like those of *P. balsamifera*, which it also resembles in the shape of the buds, but these are not so viscid or so dark in colour. Leaves glabrous, $4\frac{1}{2}$ inches long, $3\frac{1}{2}$ inches wide, broadly ovate, cordate at the base, which bear two conspicuous glands in front; apex long, slender, and acuminate; margin with a well-defined translucent border, and scattered deciduous cilia, with serrations like those of *P. balsamifera* in size, but not so sharp; under surface paler than the upper side, but not whitish, as in *P. balsamifera*; petiole glabrous, quadrangular in section, channelled above.

This tree, combining characters which are peculiar to two different sections of the genus, is undoubtedly a hybrid, and recalls in the selection of those characters the similar combination in *P. generosa*. Of the prevalence of this hybrid in the wild state I have no means of judging, as the specimens from South Haven are from a single tree, and give no clue to the nature of the trees in the original grove, which may have been, like the Poplars at Waukegan, *P. balsamifera* var. *Michauxii*. This hybrid, if of the first generation, may be worth introduction into cultivation. A. Henry.

AUSTRALIA.

BEARDED IRISES.

IN 1911 a young enthusiast, in the person of Mr. Clarence Bastin, resolved to bring the Victorian collection of bearded Irises up to date, and after searching through the horticultural publications of Europe and America, and corresponding with Messrs. Dykes, Goos, and Farr, a complete collection of varieties was imported from leading growers. After seeing the rhizomes duly survive the transportation, and well on the way to establishment in their new situation, it was the irony of fate that the young grower should, on Boxing Day, 1914, be caught in an undertow and drowned, thus depriving Australia of a keen and practical flower lover.

Living close to where the Irises are still being grown by Mr. Bastin, *senr.*, I have noted that the later seedling varieties are decided improvements upon the older standard sorts, although there are many of the latter which cannot be left out of the most exclusive collections, notably *Jacquinianna*, *Dalmatica*, *Her Majesty*, *Lohengrin*, *Iris King*, *Oriflamme*, and *Prosper Langier*. For size and decided colouring there are few equal to *Caprice*, *Monsieur*, *Eldorado*, and *Loute*, from Messrs. Vilmorin; whilst for delicate beauty, combined with size, and, frequently, fragrance, the seedlings of Farr are unsurpassed. Mary, a seedling variety from Mr. G. Reuthe, is rather too small-flowered, but possibly its lilac-pink veinings on cream ground is sufficiently distinct and pretty to justify its inclusion with the best of the bearded Irises. *Gilbert Errey*.

§ *Populus Baileyana*, A. Henry, hybrida nova inter *P. deltoides*, Marsh. var. *monilifera* A. Henry, et *P. balsamifera*, L.: foliis glabris, late ovatis basi cordatis et binis glandulis instructis, subtus nec concoloribus nec albis sed incanis, pellucide marginatis; petiolis quadrangulatis supra canaliculatis. Typum in Canada legit cl. J. G. Jack.

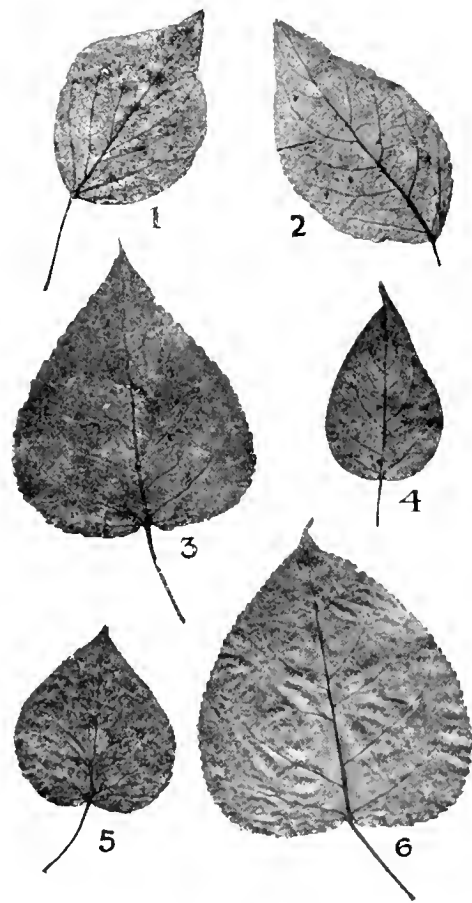


FIG. 97.—BALSAM POPLARS.

Leaves 1 and 2, *Populus balsamifera*, L., typical form from trees cultivated in England. 3 and 4, *P. balsamifera*, L. var. *Michauxii*, A. Henry, from a tree at Chateauguay, Canada. 5 and 6, *Populus canadensis*, Aiton, from a tree cultivated at Kew.

also slightly hairy. This variety, judging from leaves sent to me by Prof. C. S. Sargent, is wild in Maine, and at Waukegan in Michigan, and was formerly, in error, considered to be *P. canadensis*. The typical form of *P. balsamifera* is rarely seen in the British Isles, where only male trees are cultivated. These, on account of their ascending branches, are much more compact in habit than the common wide-spreading *P. canadensis*.

‡ *Populus balsamifera* var. *Michauxii*, A. Henry, varietas nova, apud Chateauguay in Canada, et in Maine Michiganque rivitibus silvestribus: foliis ovatis, basi latis rotundatis vel subcordatis, subtus ad nervos puberulis; petiolis et innovationibus sparse pilosulis.

* In *Bot. Gaz.*, V., 91 (1886).

† In *Bull. Illinois State Laboratory, Urbana*, IX., 287 (1912).

ORCHID NOTES AND CLEANINGS.

ABNORMAL CYPRIPEDIUM FLOWER.

AN abnormal flower of a *Cypripedium* seedling of the *C. Hera* class is sent by Mr. A. Coningsby, gardener to Col. H. Cary Batten, Leigh Lodge, Abbot's Leigh, Bristol. The ovary is quadrangular, and the column furnished with two perfect anthers and one strongly developed stamen, which is continued into a broad petaloid blade erected above two perfect staminodes, beneath which is an enlarged white stigmatic plate. There are two perfect and handsomely-marked upper sepals diverging right and left, the central space, usually occupied by the dorsal sepal, being filled by the petaloid blade on the back of the column. The lower sepals, lip and petals are normal in form and colour, but as is usual in such departures from the natural form, there is evidence of the fusion of two flowers, although some of the segments are suppressed.

THE MANURING OF COTTAGE GARDENS AND ALLOTMENTS.*

FARMYARD manure at the disposal of the cottager and allotment holder is often poor in quality, as compared with farmyard manure made in well-constructed cattle-feeding yards. It is apt to contain too much straw, or other litter, and too little of the animal excreta. In view of the bulk of material applied, therefore, the crop returns obtained from its application are often disappointing.

When the manure has to lie for some time in a heap before application it should be covered with about 6in. of soil in order to preserve the fertilising material.

In the case of heavy soils the manure is best dug in during autumn and winter; in the case of light soils this should be done in spring, some time before cropping.

The undecayed portions of the manure should preferably be used for the green crops (Cabbage family), the more completely decayed portions for the root, fruit and flower crops.

An average market-garden dressing of manure would be about 2½-3 cwt. per rod (30½ sq. yd.). A large barrow-load of moderately decayed manure will usually weigh about 1 cwt.

Where the full dressing of ordinary manure cannot be obtained, artificial manures, as indicated below, may be applied with advantage.

POTATOS.—Where the crop is grown on the flat, sulphate of ammonia should be applied on the surface just before the first earthing up, at the rate of ½ oz. per sq. yd. (1 lb. per rod, or 1½ cwt. per acre). Where Potatoes are planted in drills the sulphate of ammonia may be applied in the drills at the time of planting.

Superphosphate of lime should be applied at the rate of 1½ oz. per sq. yd. (3 lb. per rod, or 4½ cwt. per acre), and may be forked in lightly before planting on the flat, or applied in the drill at the time of planting; or, superphosphate and steamed bone flour may be mixed in equal proportions and applied when planting at the same rate as in the case of superphosphate alone.

CABBAGE FAMILY.—All the members of this group respond to applications of nitrogenous manures.

Sulphate of ammonia should be applied at the rate of ½-¾ oz. per sq. yd. (1-1½ lb. per rod, or 1½-2 cwt. per acre) before the first earthing up, or as soon as growth starts.

Where Cabbage crops are slow in "hearting" and Turnip crops refuse to "bulb," phosphates are usually deficient.

Superphosphate should be applied, alone or in combination with steamed bone flour, at the rate of 1 oz. per sq. yd. (2 lb. per rod, or 3 cwt. per acre) at the time of planting, or before the first earthing up.

* Special leaflet No. 56, Board of Agriculture and Fisheries.

In inland districts, where allotment crops on light and medium soils are liable to suffer from drought, salt is very helpful and will usually increase the crop. It should be applied at the rate of 1 oz. per sq. yd.

PEA AND BEAN FAMILY.—Crops belonging to the Pea and Bean family can usually provide themselves with sufficient nitrogen.

A mixture of superphosphate and steamed bone flour, in equal proportions, should be applied to the ground before or after sowing the seed, at the rate of 1 oz. to 4 yd. in length of drill.

The manure should never be sown in the bottom of the drill so as to come in direct contact with the seed.

ONIONS, LEEKS AND CELERY.—Sulphate of ammonia should be applied at the rate of ½ oz. per sq. yd. (1 lb. per rod, or 1½ cwt. per acre), with superphosphate and steamed bone flour, mixed in equal proportions, at the rate of 1 oz.

ducing a very rank growth of leaf, the sulphate of ammonia should be withheld. The reservation applies to all cottage garden and allotment crops.

LIQUID MANURE FOR FRUIT AND FLOWER CROPS.—1 peck of poultry manure or 1 peck of sheep droppings placed in a 40 gallon cask and filled up with water will, after standing 24 hours, make an excellent liquid manure if applied while fruit is swelling and, in the case of flowers, while the blooms are opening; 2 gallons per square yard should be applied weekly.

Where the above materials cannot be obtained, ¾ lb. sulphate of ammonia and 1 lb. superphosphate in 30 gallons of water will make a safe liquid manure which may be applied at the rate of 2 gallons per square yard.

GENERAL CONSIDERATIONS. Potash salts are hardly obtainable, but wood ashes, which contain potash, should be collected and applied at the rate of 1 oz. per sq. yd. to soil in which

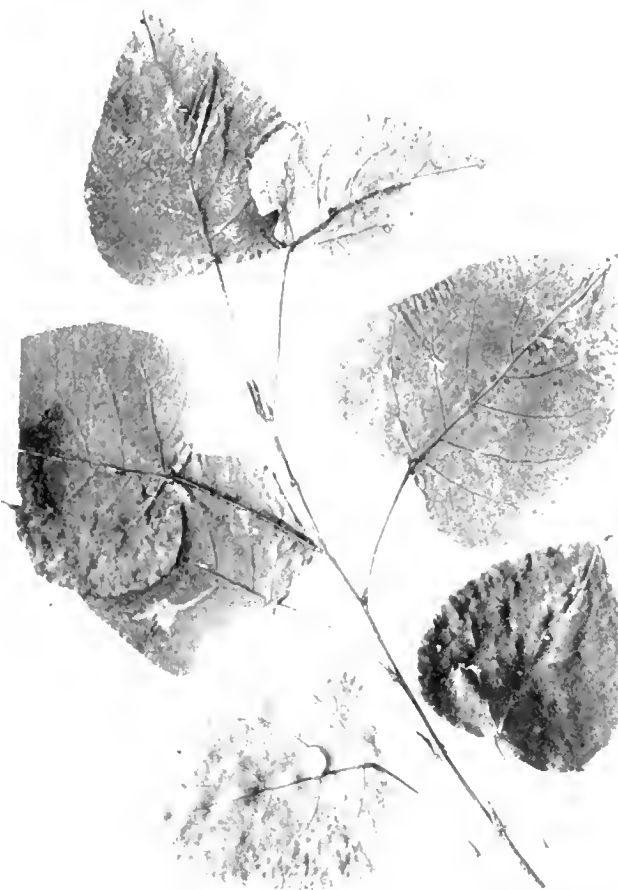


FIG. 98.—*POPULUS BAILEYANA*, A. HENRY. SPECIMEN COLLECTED IN CANADA BY J. C. JACK.
(See p. 230.)

per sq. yd. On light soils, liable to dry out, salt may be given with advantage (1 oz. per sq. yd.). These crops should all be manured in the early stages of growth.

CARROTS, PARSNIPS AND BEET.—Sulphate of ammonia should be applied at the rate of ½ oz. per sq. yd. after singling. Superphosphate and steamed bone flour, mixed, at the rate of 1 oz. per sq. yd. should be applied before sowing the seed. In dry soils, 1 oz. of salt per sq. yd. may be applied before drilling.

LETTUCE, SPINACH AND RADISHES.—These are greatly helped by applications of sulphate of ammonia, which should be applied at the rate of ½ oz. per sq. yd. in the early stages of growth. Where Radishes do not "bulb" readily, superphosphate, at the rate of 1 oz. per sq. yd., should be applied to the soil before sowing.

Where the soil is known to be overstocked with organic matter (containing nitrogen), pro-

Potatoes, Peas, Beans, Carrots, Parsnips and Onions are to be grown. The richest ash is produced by hedge clippings, prunings of fruit bushes, nettles and coarse growing weeds burnt before they are fully ripened. The ash of timber may contain little potash. Ash must be collected as soon as possible after burning, as rain quickly washes out the potash.

Recent experiments tend to show that members of the Cabbage family can avail themselves of the stores of potash already in the soil to a greater extent than most other crops, and this circumstance should be borne in mind while potash is scarce.

On heavy soils and soils rich in organic matter, basic slag may replace superphosphate, particularly in districts with a good rainfall. The quantity used should be from one and a half times to twice as much as is recommended in the case of superphosphate.

PLANT NOTES.

ACACIA BAILEYANA.

THIS charming Wattle (see fig. 99) is a native of New South Wales and Queensland. It forms a useful subject for the greenhouse and conservatory, producing its numerous erect, loose racemes of pale yellow flowers from February to April. The small, bipinnate, linear leaflets, of a soft grey-green hue, render the plant attractive at all seasons of the year. As cut flowers for vases, branches may be used in conjunction with blue Cinerarias, Violets, Freesias, Richardias and pink Tulips. The seeds should be germinated

ACACIA BAILEYANA
OUT-OF-DOORS.

ACACIA BAILEYANA is now in full flower here outside on the terrace wall, which has an aspect of S.S.E. The plant, which is 12 feet high by 4 feet in diameter, was planted there in 1912; it has always been protected during the severest part of the winter with boughs of the Common Laurel placed over it thinly. These were, fortunately, still in place at the time of the severe snowstorm of March 28 last. This species appears to be the hardiest of all the Acacias. Others that have been tried here have died eventually. *A. dealbata* survived for two or



FIG. 99. ACACIA BAILEYANA. FLOWERS YELLOW.
(The spray is reduced one-half; leaves natural size.)

in a compost of sandy peat in a warm house in spring, and the seedlings transferred later into small pots, and eventually shifted into larger ones, adding loam to the first compost. The plants make rapid growth, and should be placed in a greenhouse when well rooted after the second potting. The following year they may be placed in 9 or 10-inch pots, and grown in a cool atmosphere to encourage sturdy growth. Eventually they should be planted into a border or trained to pillars or to the walls and roof of the house. Strongly-growing, established specimens require copious watering during the growing season. *Charles Lortford, Walmgate Gardens, Louth.*

three years and flowered, but finally perished. I do not know the origin of *A. Baileyana*. Is it a species or a hybrid of garden origin? It was introduced into Belvoir Gardens some years ago by one of my journeymen, and it seems likely to continue to do well. *W. H. Diers, V.M.H., Belvoir Castle Gardens, Grantham.*

[*A. Baileyana*, the "Cootamundra Wattle," is a true species native of New South Wales and Queensland. It forms a small tree about 20 feet high, and comes into flower at least a fortnight earlier than *A. dealbata*, which latter supplies the "Mimosa" of the florists' shops. See fig. 99. —EDS.]

The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

CHRYSANTHEMUMS.—If the earliest plants have been sufficiently hardened they may be placed in a sheltered position out of doors. The large flowering sorts will need the support of stakes, and, as a precaution against damage from strong winds, place hurdles around them. Spray the foliage with an insecticide occasionally to keep the plants free from aphids. A batch of cuttings may be inserted to raise plants for flowering in small pots. Select the most decorative sorts, including some of the single varieties.

PERPETUAL-FLOWERING CARNATIONS.—It may be necessary to discard some of the old plants to make room for others which have been propagated for flowering next season. Do not crowd these young plants, as they need plenty of light to favour a sturdy growth. The best of the old plants will continue to produce good flowers if they are kept well supplied with stimulants. They may be placed close together in a cool house or plunged in ashes in a sheltered position out of doors, but protected from frost. The plants of *Souvenir de la Malmaison* varieties are developing their flower-spikes; as the pots are filled with roots feed the plants freely with stimulants. Remove all the side-buds and place a neat stake by each flowering shoot.

RICHARDIA AFRICANA (ARUM LILY).—When the plants have finished flowering remove them to a sheltered position in the open and reduce the supply of water at the roots gradually until the foliage has died down, then turn the pots on their sides to allow the plants a period of rest.

HUMEA ELEGANS.—Seeds of *Humea elegans* will germinate much more freely now than later, when the weather is hot, and plants raised from will be none too early if grown in cool conditions. Sow the seed in pans filled with a sandy compost and place the seedpans in a moderately warm house. Cover the pans with sheets of glass and keep the soil shaded until the seedlings are through the soil. Plants raised last year must not be hastened into flower, nor must they be exposed to bright sunshine.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOLE, Eastwell Park, Kent.

PEACHES AND NECTARINES.—The trees should be disbudded before the young growths are far advanced. Healthy trees of Peach and Nectarine produce a large number of young shoots, and unless they are thinned rigorously the trees will inevitably suffer much harm. A thicket of growths obscures the light, aphids and red spider spread quickly on the enfeebled branches, and in the autumn the wood fails to ripen. In commencing the work of disbudding first remove all fore-right shoots, and those in unsuitable positions, such as those facing the wall. When this has been done commence to remove the superfluous growths at the top portion of the tree, the degree of disbudding to be regulated by the age of the tree. For example, if the tree has almost filled the wall space the disbudding must be severe, as few shoots are required for extension. On the contrary, young trees should be permitted to extend, leaving sufficient shoots for the purpose. As a rule growers retain too many shoots in spring, allowing them to remain all the summer exhausting the sap and shading the fruits, only to be cut away in the following autumn or winter. Well-placed shoots at the base of the fruit-bearing wood should always be retained, with a view to replacing the fruiting ones of this season. Endeavour to keep the tree well furnished with firm, new wood, trained in such a manner as not to shade the fruits. Thin

training is necessary to allow sunshine to develop the flavour in the fruit, and ripen the wood for the ensuing year's fruiting. Do not disbud in dull, cold weather, nor operate on more than a portion of the tree at one time. When the upper part of the tree has been attended to, wait for a few days, and then disbud the central portion; after a similar interval complete the work at the lower part of the tree.

TRAINING YOUNG PEACH TREES.—In training young Peach trees on walls it will be necessary to retain sufficient young shoots to furnish bare spaces and allow of extension of the main branches. Only by practical experience can it be determined exactly how many shoots are necessary, but by carefully following out each detail and watching the result the beginner will soon acquire confidence and skill in the art of training Peach trees. Do not allow a central upright shoot to develop; this should always be removed at an early stage and the shoots trained in the shape of a fan.

MULCHING NEWLY-PLANTED FRUIT TREES.—Dry winds may be expected, therefore newly-planted trees, and especially those shifted late in the season, must be watched that the roots do not suffer drought. Heavy soils should be forked lightly to prevent the surface getting caked, or it will crack in dry weather. Afterwards apply a mulch of light manure. In very hot weather the trees will require watering, and syringings overhead in the afternoons will be of great benefit to the health of the trees, and will keep them free from insect pests.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

BORDER CHRYSANTHEMUMS.—Border Chrysanthemums furnish a rich display of flowers from early August till well into the frosty season. Although the roots may remain undisturbed in the ground for several years, the best results are obtained by raising plants each year from cuttings. Put the plants in their quarters at the earliest opportunity, but see that they have previously been well hardened. Chrysanthemums need a rich soil, which should be dug two spits deep and enriched with decayed manure. One copious watering when they are planted should suffice, although more abundant and better flowers are obtained if liquid manure is used later in the season. Short Pea-sticks offer a simple and effective support for general purposes. Plants intended to furnish cut blooms should be set in rows 2½ feet apart, and a distance of 1½ feet between the plants in the rows. By making double rows 18 inches apart, with a space of 2½ feet between them, a saving of ground is effected.

TENDER BUDDING PLANTS.—The greater part of the summer bedding should be planted by the end of May, therefore it is necessary to hasten the hardening off of the various subjects. Many old plants which are not very susceptible to injury by cold winds may be removed from the cold frames and set in a sheltered, though not shady, position. It will be necessary to arrange a framework of sticks for supporting mats to protect the plants during very cold nights or when there is a prospect of frost. This will make room in the cold frames for plants which have hitherto been in heated structures, whilst those in warm houses may be removed to a cool house or pit. Watch the thermometer out-of-doors late in the evening, so that there may be no avoidable damage from frost to the plants just taken from the pits.

WEED-KILLERS.—It is generally advisable to use weed-killers slightly stronger than recommended by the maker. The liquid must not come in contact with the roots and foliage of Box used as edging, nor must it be sprayed on the turf verges. The operator must not tread from the wet ground on to the turf. For gravel paths that are not very weedy the weed-killer may be applied by means of a white-wash brush and pail, dropping a little of the liquid where weeds appear. A large surface of path can be treated in a short time in this way.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

EARLY LEEKS.—Seedling Leeks should be transplanted into the garden quarters. For ordinary purposes they may be planted deeply in holes made with a dibber, allowing a space of 1 foot between the plants in the rows, and 15 inches between the rows. Extra fine roots may be obtained by planting in rows in a slight depression, sufficient to hold water, allowing space between the rows to allow of working the ground freely. The stems may be blanched by means of paper collars 5 inches deep, which should be placed about the plants immediately they are planted. The paper collars should be successively raised as the plant develops, until a sufficient length of stem is blanched.

CARDOON.—Sow seeds of Cardoons in light soil, making trenches as for Celery, putting a good layer of manure at the bottom, covered with several inches of soil. Drop a few seeds in groups at 3 feet apart, thinning each group subsequently to the most promising seedling. Heavy soils should be trenched and enriched with manure. A slight depression only is necessary in which to sow the seeds.

CHICORY.—Sow seeds of Chicory in deep, well-cultivated soil, that has not been manured this season. Sow in drills made 14 inches apart, and thin the seedlings to 10 inches apart. If space in the more open parts of the garden is limited this vegetable may be grown successfully in partial shade.

SORREL.—This vegetable is a good substitute for Spinach in hot weather. Treat the plant as biennial. Seeds may be sown as advised for Chicory, but rich soil is not necessary, as Sorrel thrives in poor ground in damp, shaded situations. Remove the flower-spikes as soon as they appear from last season's plants, and destroy all plants sown previous to last season.

NEW ZEALAND SPINACH.—Although not possessing the true Spinach flavour, this vegetable is appreciated by many as a substitute. It is a useful crop for light, dry soils, in which Spinach is difficult to cultivate. Plant several seeds by means of a dibber in groups at 3 feet apart in each direction, eventually retaining the strongest seedling only in each group. Time may be saved by sowing the seeds in 3-inch pots, filled with rich soil, and germinating them in a temperature of 55°, retaining the strongest seedling only. Harden the plants and set them out at the distance advised above when the weather is favourable.

GENERAL REMARKS.—Hoe the soil between seedlings and thin the latter in good time. Harden Celery preparatory to transferring the plants out-of-doors. Carrots growing in frames should be ventilated freely, and kept in a moist condition. Remove the lights on all favourable occasions from Potatoes growing in frames.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warton Priory, Yorkshire.

FIGS.—Early pot trees which have been surrounded with fermenting material are producing fresh roots. These should be encouraged by placing turves around the rims of the pots, to hold well-decayed manure, that will help the fruits to swell. Do not neglect the roots within the pot, but keep all well supplied with warm, diluted liquid manure and other stimulants. Use the syringe freely until the fruits commence to ripen, when the amount of ventilation should be increased and gentle fire-heat used. Exposure to sun and light being essential to develop colour and flavour in the fruits, remove weak and crowded shoots, and pinch the gross ones. By these means, and keeping the temperature at about 65° at night, with a little air, and 75° to 80° on bright days, the fruits will attain to a good size and ripen quickly. Trained trees require constant attention in thinning, and tying the shoots where there is room for extension of the tree. Extension training, where space admits, is the simplest

and best way to grow good Figs, provided the branches are well thinned at the winter pruning, the roots kept within bounds, and feeding done liberally. Fire-heat cannot yet be dispensed with, but the valves of the hot-water pipes should be shut off early on bright, fine mornings. Air should be admitted when the temperature is 70°, and gradually increased until noon. Syringe the plants and close the house early in the afternoon, with plenty of moisture in the atmosphere.

EARLY PEACHES AND NECTARINES IN POTS.—Let the trees have very careful attention when the fruits are at the stoning stage; feeding, top-dressing, the maintenance of a steady temperature through the night, early closing of the ventilators, and careful syringing of the trees are important details. It is not a good plan to pinch the shoots unduly during the time of stoning, but directly the fruits commence to swell shorten the laterals and sub-laterals by degrees to permit the light and air to enter the tree, as well as to increase the size of the fruits. All danger of the fruits dropping will be passed when stoning is over, and they may be thinned finally with a free hand. The fruits will develop rapidly, and the roots must be fed liberally with liquid manure and other stimulants until the fruits commence to colour. Aphids must be held in check by fumigating, and red spider combated by syringing every part of the tree regularly each day, and twice daily in very bright weather. For bad infestations of red spider syringe with clear soot water. Whenever the least sign of colouring is discernible in the fruits, increase the amount of ventilation night and day, and reduce the atmospheric moisture, discontinuing syringing as the fruits approach ripeness, but continuing to keep the roots fairly moist.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chesham, Gloucestershire.

LISBOCHILUS.—The tuberous-rooted Orchids in the genus *Lisbochilus* resemble Phaius in their foliage and general habit. They may be re-potted in a similar compost to that employed for Phaius when they commence to grow. They should be grown in the hottest house, and the surroundings must be kept damp; when the roots have taken possession of the fresh soil they will need an abundance of water. A little shade is necessary, but shading must not be overdone, or the foliage will be weak, and the flowers lack substance. As growth advances the leaves may require a little support. The plants should be examined periodically for the presence of red spider and scale insects. After growth is completed a small amount of water suffices to keep the plants in a good condition. When the foliage has decayed the plants should be rested in a warm house.

EULOPHIA.—*Eulophia guineensis* produces spikes of pretty flowers in August or September. The plant should be potted in a mixture of peat or Osmunda-fibre and Sphagnum-moss. During the growing season it should be placed in a shady part of the warm division, and the roots freely supplied with water. When the foliage shows signs of maturity only a small amount of water is required until the plants commence to grow again in the spring.

LAELIA MONOPHYLLA.—When the plants start into growth they should be re-potted or top-dressed, as necessary. Use small pots or pans, furnished with plenty of drainage material, as the roots need only a small quantity of soil. A mixture of Osmunda-fibre and Sphagnum-moss forms a suitable rooting medium. Both the fibre and moss should be cut into fairly small portions. Grow the plants near the roof-glass of the intermediate house.

ONCIDIUM VARICOSUM.—This autumn-flowering *Oncidium* has been resting for the past month or two, and fresh growth is developing at the base of the last made pseudo-bulbs. When new roots appear the plants may be re-potted or top-dressed, using the compost advised on p. 196. Grow in an intermediate temperature.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would obviate delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the Editors. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR MAY.

TUESDAY, MAY 2—

Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
Nat. Auricula Soc. (Southern Sec.) Show, R.H.S. Hall. Scot. Hort. Assn. meet.

WEDNESDAY, MAY 3—

B.G.A. Executive meet.

THURSDAY, MAY 4—

Linnean Soc. meet.

MONDAY, MAY 8—

United Hort. Ben. and Prov. Soc. Com. meet.

WEDNESDAY, MAY 10—

Sheffield Chrys. Soc. meet.

TUESDAY, MAY 16—

Royal Hort. Soc. Coms. meet. (Lecture at 3 p.m.)

TUESDAY, MAY 23—

Roy. Hort. Soc. Show at Chelsea (3 days).

WEDNESDAY, MAY 24—

Linnean Soc. Anniversary meet. at 3 p.m.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.7°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, April 27 (10 a.m.); Bar. 29.6°; temp. 63.0°. Weather—Sunny.

SALES FOR THE ENSUING WEEK.

WEDNESDAY—

Lilies and other Hardy Bulbs, Herbaceous Plants, Roses, Fruit Trees, etc., at 12, Flower and Grass Seed (by order of Marshal of the Admiralty, per Messrs. Churchill & Sim), at 3, at Protheroe & Morris's Rooms, 67 & 68, Cheapside, Orchids at Walton Grange, Stone, Staffordshire, by order of W. Thompson, Esq., by Protheroe & Morris, at 12.30.

Australian Trees and Shrubs.

At a recent meeting of the Bournemouth Natural Science Society an account was given by

Sir Daniel Morris of the Australian trees and shrubs which are to be found naturalised on the South Coast of England.

Sir Daniel pointed out that whereas the outstanding feature of the Australian climate is its dryness, yet nevertheless a large area, particularly in the eastern half, is fairly well watered, about three-fifths of the Australian land surface having a rainfall of from 30 to 40 inches.

With respect to temperature, although the Australian climate is milder than that of countries of corresponding latitudes in the northern hemisphere, the mean temperature of the southern half—from 45° to 61°—does not differ greatly from that of the mean of the South Coast of England (50.4°). Thus both as to rainfall and mean temperature there is no great dissimilarity between New South Wales, Victoria, Tasmania, and our southern coast districts.

The success which has attended the introduction of Australian trees and shrubs to the South Coast is due not only to the congenial climate, but also to the unremitting care of horticulturists. Thus, during the last hundred years the Earls of Ilchester have established gardens of acclimation at Abbotsbury Castle wherein

large numbers of temperate and sub-tropical exotics have been grown successfully. The catalogue prepared in 1899 by the Dowager Countess of Ilchester contains some 3,000 names of introduced trees, shrubs and herbaceous plants. Other gardens also in the neighbourhood of Bournemouth—those of the late Alfred Russel Wallace at Broadstone, and of Mr. Reginald Hargreaves, near Lyndhurst—contain a certain number of Australian trees.

Maiden divides the vegetation of Australia into three great types: the brilliant flowering plants of the sandy plains of Western Australia, the luxurious vegetation of East Queensland and New South Wales, and the alpine plants of Tasmania. In addition to these are the vast forests of Beech of Western Tasmania.

Almost entirely confined to Australia are the phyllocladous Acacias and the Gum Trees (Eucalyptus). Of the latter there are 230 species and of the Acacias 412. As is well known, the genus Eucalyptus contains many species of high economic value, for their bark, resin and oil, and for their timber. As is natural, Australian Eucalyptus have been introduced into many sub-tropical countries—for example, North Africa, the Cape, California, Chili and the Mediterranean region. They have been introduced also into the British Isles, and nowhere on a larger scale than at Abbotsbury. Forty species have been tried there, and of them about a dozen have proved hardy and withstood the severe winters of 1907 and 1908. The largest plantation of Eucalyptus, consisting of 900 trees, is that made by the late Mr. Bateman at Brightlingsea Hall, Essex. Dr. A. R. Wallace had about 60 trees, chiefly *E. Gunnii*, at Broadstone. In the public gardens in Bournemouth and the neighbourhood there are some six species. Among the hardier Eucalypts are the Blue Gum *E. Globulus*, of which a fine specimen at Penmere, when measured by Mr. Elwes in 1911, was 95 feet high, and the Tasmanian Cider Gum *E. Gunnii*, which, Sir Daniel states, was the first Australian tree planted in England. It is quite hardy in the southern counties, and a tree at Abbotsbury measures 70 feet in height by 5 feet in girth. *E. Whittinghamensis*, said to have been raised from seed brought by the late Lord Salisbury from Tasmania, is closely allied to *E. Gunnii*, and is regarded by Mr. Henry as a hybrid between *E. Gunnii* and a species, probably *E. urnigera*, with urn-shaped fruit. The specimen growing at Whittingehame, the seat of the Rt. Hon. A. J. Balfour, is now more than sixty years old, and when measured by Mr. Elwes in 1904 was 60 to 63 feet high, with a girth of 13 feet 5 inches at 2 feet from the ground. Seedlings raised from this tree are said to be no less hardy than the parent. *E. acervula*, the Swamp or Red Gum, is represented at Menabilly, Cornwall, by three trees: Mueller's Red Gum, *E. Muellieri*, confined to Tasmania, is represented by a specimen 15 feet high on Horseshoe Common, Bournemouth, and by two trees, each 40 feet high, at Abbotsbury. Eucalyptus

coccifera, the Mountain Peppermint, native of the mountains of Tasmania, is regarded by Elwes and Henry as the most successful of all the species introduced to this country. *E. cordata*, confined to Tasmania, thrives at Abbotsbury. *E. pulverulenta*, *E. urnigera*, *E. vernicosa*, *E. pauciflora*, and *E. viminalis* are other species with claims to hardiness.

Of hardy Acacias, the Silver Wattle, the Mimosa of the Riviera and the flower shops, grows along the South Coast of England. At Abbotsbury it has attained the height of 60 feet in seventeen years from seed, and bears abundance of flowers and good seed. *A. melanoxylon* forms a tall tree of regular habit, and at Abbotsbury is represented by a twelve-year-old tree 35 feet in height. Other Acacias growing in that garden are *A. floribunda*, *A. pycnantha*, *A. verticillata*, *A. cyanophylla*. Australian trees and shrubs more or less hardy on the South Coast include various genera of Proteaceae, *Grevillea*, *Banksia*, *Hakea* and *Telopea*. The garden of the late A. R. Wallace contains a fine specimen of *Grevillea robusta*, the Silky Oak. Two species of *Banksia* are in cultivation at Abbotsbury, *B. quercifolia* and *B. integrifolia*, and *B. collina* grows in Wallace's Broadstone garden.

A remarkable *Hakea* grows on the lawn at Cuffnell's, near Lyndhurst. This, the Dagger-leaved *H. pugioniformis*, is about 20 feet high and 4 feet 6 inches in girth. Sir Daniel Morris computes that in all there are sixty more or less hardy Australian species established on the South Coast. Among them are the Musk tree, *Okaria argophylla*, the Flame-tree, *Brachychiton acerifolium*, *Leptospermum scoparium* (Captain Cook's Tea plant), three species of *Pittosporum*, *undulatum*, *rhombifolium* and *bicolor*, *Cordyline* species, *Sollya heterophylla* (an attractive climber with blue flowers and worthy of wide cultivation), *Calothamnus quadrifidus* (with evergreen needle-leaves and scarlet flowers), *Chorizema angustifolium* (with orange-red pea-like flowers), two *Hardenbergias*, *Clanthus Dampieri* (which is better than the New Zealand *C. puniceus*), *Correas*, *Melaleucas*, *Veronica formosa* (pale blue), and *V. perfoliata* (with bluish-violet flowers).

SCOTTISH HORTICULTURAL ASSOCIATION'S CHRYSANTHEMUM SHOW ABANDONED. — The Council of the Scottish Horticultural Association has decided to abandon for the current year the Chrysanthemum Exhibition which in normal times is held in Edinburgh in the month of November.

PUBLIC PARK FOR STALYBRIDGE. — By the terms of the will of the late JOHN FREDERICK CHEETHAM, his residence, Eastwood, and 20 acres of ground, are bequeathed to the town of Stalybridge. The sum of £2,000 is also left towards the cost of fencing, and for the alteration and adaptation of the house, and £18,000 for the upkeep of the estate. The woodland adjoining Eastwood is left to the executors of the will, with instructions that it is to be used as a preserve for the fauna and flora of the district.

TRIAL OF STOCKS AT WISLEY. — A trial of biennial and winter-flowering Stocks will take place at the R.H.S. Gardens during next winter

and spring. One packet of each variety to be tried should reach the Director of the Gardens, from whom the necessary entry forms may be obtained, not later than Monday, May 9, 1916.

WREST PARK.—Lord Lucas has offered Wrest Park, Bedfordshire, to the Government as an agricultural colony for soldiers and sailors. This estate is situated near Silsoe, a picturesque village midway between Bedford and Luton, on the main London road. The Government will take over as much of the famous gardens and parks as they require. The grounds are stocked with fallow deer, and include nearly 500 acres of good pasture land. The views about the house (see figs. 100 and 101) are very beautiful, the gently ascending gardens and terraces being flanked by immense Elms and some of the finest Limes in England. The park is studded with old Oaks, and bordered by a wide artificial river, and in the gardens there are

(Seine), a village which, since 1910, has been known as "L'Hay les Roses." No sooner was he established on his property, in the middle of a region where Rose growing has always been an important industry, than he began to collect and study the flower, of which he had soon gathered together nearly 1,500 varieties. In 1899 he asked EDOUARD ANDRÉ to draw up a plan of the Rosary, which rapidly became more and more celebrated, until it attained to a world-wide fame. JULES GRAVEREAUX soon realised that his work would mean more than simply collecting horticultural varieties; he was bent on placing them in a setting worthy of their value, and making a collection of botanical species of the genus *Rosa*, which would serve the interests of scientific research and facilitate the production of new varieties by crossing. He formed at the same time a special herbarium, and a library which contained practically every

made by the EMPRESS JOSÉPHINE on this historic estate. It was no easy task to search out the two hundred and fifty species or varieties which had been for so long abandoned by horticulturists. Thanks, however, to long and patient research, one hundred and ninety-eight of them have been discovered and replaced. Among the publications issued from L'Hay the following may be cited: *Collection botanique du genre Rosa* (1889); *Catalogue des Roses à la Roseraie de L'Hay* (1905); *Manuel* and 1902; *La Culture des Roses dans les Balkans* (1901); *Essais de fabrication d'essence de Roses à la Roseraie de L'Hay* (1906); *Manuel pour la description des Roses* (1905); *La Rose dans les lettres, les sciences, et les arts* (1905); *Histoire rétrospective de la Rose* (1910); *Les Roses à la Roseraie de L'Hay* (1905); *Manuel* (1912). We trust that the work of JULES GRAVEREAUX will be continued by his sons, who have



FIG. 100.—WREST PARK, BEDFORDSHIRE, PRESENTED BY LORD LUCAS FOR THE PURPOSE OF FORMING A FARM COLONY FOR SOLDIERS AND SAILORS.

many pools and waters, walks and grottoes, formerly laid out by the Duke of Kent. Among the inscriptions in the gardens is one upon a column stating that "These gardens were begun in the year 1706 by the Duke of Kent, who continued to beautify them until the year 1740; the work was again carried on by PHILIP, Earl of HARDWICKE, and JEMIMA, Marchioness DE GREY (granddaughter of the Duke of KENT), with the professional assistance of Mr. LANCELOT BROWNE, 1756-60." The principal features of the gardens were described in these columns June 16, 1900, and August 29, 1903.

THE LATE JULES GRAVEREAUX.—The *Revue Horticole* gives an interesting account of JULES GRAVEREAUX, the famous rosarian, whose death has been already recorded in these columns (see p. 216). Formerly manager of the Magasins du Bon Marché, JULES GRAVEREAUX became the possessor, in 1892, of the mansion of L'Hay

publication of any kind devoted to the Rose. Among new Roses which we owe to L'Hay, at least twenty could be mentioned which possess special merit. Such are *Amélie Graveraux* (1904), *Madame Ancelot* (1901), *Madame Ballu* (1905), *Madame Henri Graveraux* (1904), *Madame Julien Potin* (1912), *Madame Labori* (1906), *Madame Lucien Villeminot* (1904), *Madame René Graveraux* (1907), *Madame Tiroi* (1907), *Madeleine Filot* (1907), *Rose à parfum de L'Hay* (1901), *Madame Pierre Lafitte* (1907), *Les Rosati* (1907), *Madame Ruau* (1903). GRAVEREAUX presented to the city of Paris a collection of Roses, from which originated the Rosary of Bagatelle, where each year an international exhibition of new Roses is held. When Monsieur OSHUS presented to the nation the mansion of La Malmaison, it was to Monsieur GRAVEREAUX that Monsieur AJALBERT turned for help in reconstructing the collection of Roses

collaborated in it and are in a position to understand its great importance.

RETIREMENT.—Mr. JOHN BLACK has retired from the management of Sir ARTHUR BUCHAN HEPBURN'S gardens and grounds at Smeaton-Hepburn, after 57 years' service with the present baronet and his father. Sir ARTHUR BUCHAN has reserved a farm house on the estate, in which Mr. BLACK will live.

THE LIBRARY OF THE ROYAL BOTANIC GARDENS, KEW.—The issue of the eighteenth annual supplement to the Catalogue of the Library of the Royal Botanic Gardens, Kew, is an event of no great importance taken alone; but as a continuation of the record of the gradual formation of a national, botanical, and horticultural library, it deserves the widest publicity. There are botanists living who remember the foundation of the Kew library by Sir WILLIAM

HOOKE, GEORGE BENTHAM, and WILLIAM ARNOLD BRONFIELD, and with the flow of time, a host of other donors have enriched it. Soon after the death of Sir WILLIAM HOOKE in 1865, the Government purchased his herbarium and library, and Sir JOSEPH, his successor as director, gave freely of the numerous books presented to him personally during his twenty years of office. But Sir WILLIAM THISELTON-DYER inaugurated a more systematic and methodical management of the library. He weeded out a large number of duplicates, which went to enrich the Edinburgh and other collections. He established the *Kew Bulletin*, and promoted the more active publication of HOOKE's *Icones Plantarum* (continued at the cost of the BENTHAM bequest), and by means of these publications increased the exchanges with other botanical institutions and private botanists. Then, in 1899, he succeeded in inducing the Government to print a complete catalogue of the library. This is a volume of 790 pages, compiled by Dr. B. DAYDON JACKSON, and comprises, approximately, some 20,000 entries. The supplements collectively occupy about 600 pages, and contain between 9,000 and

rate and costly illustrated publications. The far-seeing Dr. LINDLEY realised the value of such catalogues. Kew is relatively rich in complete sets of the earlier, as well as the later, illustrated floricultural periodicals. The arrangement of this vast collection of books is perhaps as practical as circumstances permit, and it is easily understood. Language, period, category, and other qualifying conditions enter into the classification. Underlying all is permanency of position, so far as possible. A rich library demands a competent and devoted librarian, and that Kew possesses in Mr. F. A. SKAN, who is ever ready and amiably helpful, alike in book and subject. Much more might be written on this theme; suffice it to add that the library and herbarium are supplemented by the unrivalled separate collection of drawings of plants, and by the North Gallery of paintings.

VEGETABLE GROWING IN BACK YARDS.—The Curator of the Manchester Botanic Gardens is arranging an exhibition which is intended as a demonstration of the possibility of growing vegetables with success in a paved backyard. The exhibition is in the hall, the floor of which

given to groups, is intended for (1) women or young girls desirous of qualifying for positions as gardeners, from among whom the Union will choose the most capable to send, later on, to devastated districts, to re-make the gardens which have been destroyed; (2) to amateurs; (3) to refugee women, to whom will be given the sole charge of a small plot, and who will receive the necessary seeds and plants. The President is Mlle. LATAPPY, 43, rue Claude-Bernard, Paris (Ve.).

BELGIAN POTATO CROPS.—The German Governor of the provinces of Brabant and Antwerp has issued a decree, according to which all areas planted with early Potatoes are to be scheduled. The growers are obliged to report the acreage planted, a refusal rendering them liable to six months' imprisonment and a fine of 10,000 marks. It is thought that the decree may be preparatory to the requisitioning of the whole crop for consumption in Germany. The district to which it applies contains the Malines area, on which thousands of tons of early Potatoes are grown. These are available from early June onwards.

WAR ITEM.—Corporal W. LIMB, Machine Gun Section, King's Shropshire Light Infantry, died on the 7th inst. of wounds received on April 6. Corporal LIMB, a young man of great promise, was previously employed at Brynkinalt Gardens, Chirk.

GRAPES FROM THE WAR AREA.—At the Paris meeting of the National Horticultural Society of France, M. ANATOLE CORDONNIER, Bailleul, staged handsome bunches of Black Alicante Grapes, notwithstanding that the German troops twice passed through Bailleul and that a large number of English troops were subsequently lodged in his greenhouses.

ANTIRRHINUM RUST.—Reference is made in the *Florists' Exchange*, of America, to a preventive of Antirrhinum rust, which consists in the application of Bordeaux mixture every two weeks from the seedling stage until the formation of the flower-spikes, followed by a weekly application of ammoniacal copper carbonate during the rest of the growing season. It is noted, however, that Bordeaux mixture discolours the foliage, so that it cannot be used during the flowering season.

CHRYSANTHEMUM SOCIETY OF AMERICA.—The fourteenth annual meeting of this society was held at Cleveland, Ohio, on November 10, 11, 12, and 13, and we have just received the printed report of the proceedings. It contains a frontispiece portrait of the president, WM. KLEINFELTZ, list of officers and committee, the president's address, the secretary's and the treasurer's reports, and a list of the prize winners at the Cleveland Show. There are also the official scales of points, and list of novelties distributed. The membership, we notice, does not exceed one hundred.

FOREIGN CORRESPONDENCE.

PRICES IN HOLLAND.

SINCE March 10 the temperature, which up to that time was normal for the time of year, has much decreased. The snow only fell for a few days, but the cold wind which followed it contributed to the lowering of the temperature, and to a considerable retardation of the growth of Roses under glass. However, in spite of the dry, cold wind which has prevailed for the last fifteen days, prices have steadily declined. Germany, which had closed her frontiers against importations of Dutch cut flowers, has just partially reopened them.

The Lilac season is almost over, but Roses are beginning to arrive, and the least rise in temperature will double the production at once, which is already good.



FIG. 101.—CHINESE BRIDGE IN THE PLEASURE GROUNDS AT WREST PARK.

(See page 234.)

10,000 additional entries. Entries in the main catalogue and supplements include works of single volumes up to those of a hundred or more, besides separately paged and titled reprints. It is estimated that the library now contains upwards of thirty thousand volumes, and, it may be added, practically all in good condition. The binding of periodicals and serials is well up to date, but there are many thousands of tracts and reprints still unbound. These are arranged in covers in such a way that the librarian can at once put his hand on any required pamphlet. As a whole, the library is very comprehensive, and, although not rich in editions of the old masters, it comprises a representative series of the best editions, mostly in fine examples. A valuable element is the collection of books of travel, containing more or less botany, often supplemented by pictorial representations of individual plants and aspects of vegetation. Horticultural literature, British and foreign, is much more fully represented than is commonly supposed, including nurserymen's catalogues, containing figures and descriptions of novelties, to the most elaborate

of concrete. A series of raised beds has been formed, 18 inches in height, each enclosed in six loose layers of 3-inch bricks, of which only the coping layer is mortared. Potatoes, Cabbages, Cauliflowers, Turnips, Parsnips, Carrots, Onions, Leeks, Beetroots, Lettuces, Radishes, and other salad vegetables are being grown, and certain of the beds are planted with bush fruits.

NATIONAL HORTICULTURAL SOCIETY OF FRANCE.—The date of the Paris Spring Show is from May 31 to June 5 inclusive. The date of the autumn show, which will take place some time in November, is not yet fixed.

FRENCHWOMEN IN HORTICULTURE.—We learn from the *Revue Horticole* that the society known as the Union pour l'enseignement agricole et horticole féminin, which established the first horticultural college for women in France, has completed a scheme for giving instruction to women and young girls on a plot of five hectares situated at Clamart (Seine). The land has been presented by the owners, Monsier and Madame DESROMMES. The instruction, which will be

Prices at Aalsmeer on March 14 were:—

Lilac—	Per stem.
Marie Legraye	14-25 ct.
Charles X.	12-19 ct.
L. Späth	12-17 ct.
Roses—	
Kaiserin Augusta	24-31 ct.
Caroline Testout	19-26 ct.
Jonkheer J. L. Moek	26-35 ct.
Arnold Janssen	18-24 ct.
Edward Mawley	16-22 ct.
Mme. Abel Chatenay	24-36 ct.

AALSMEER le 22 Mars.

Maximum price for first quality flowers.

Lilac—	Per stem.
Marie Legraye	24 ct.
L. Späth	12 ct.
Charles X.	10 ct.
Roses—	
Kaiserin Augusta	16 ct.
Caroline Testout	11 ct.
Jonkheer J. L. Moek	18 ct.
Mme. Abel Chatenay	16 ct.
Sunburst	16 ct.
Prince de Bulgarie	16 ct.
Arnold Janssen	12 ct.
Edward Mawley	10 ct.
Etoile de France	9 ct.

Efforts have been made to grow American Carnations at the Horticultural School, Aalsmeer. As these efforts have yielded good results, local growers have decided to take up the cultivation of these flowers on a fairly large scale. It is important that English cultivators should take every opportunity to offer young plants, unless they wish to see every order taken by the Germans, who are beginning to inundate this country with their catalogues. *C. Dumonceau, Oostvinder, Aalsmeer (Hollande). March 23, 1916.*

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

APPLE LEAVES SCORCHED BY LIME-WASH.—On several occasions it has been stated by contributors to these columns that fruit trees may be safely sprayed with lime-wash at any time up to the blossoming, and that even when the trees are in full blossom no harm is done by such spraying. My recent experience is in direct contradiction to this statement. In the second week of April a number of varieties of Apples was partly sprayed, the lower halves of the rows being left to be done in the following week. On some varieties the trusses of young leaves surrounding the blossom buds were showing at the time of spraying, and wherever that was the case they are badly scorched. There is no doubt whatever as to the cause of the scorching, as there is not a trace of that damage on the parts of the rows which were not sprayed at the time named. The damage, I fear, will be serious. It affects Cox's Orange Pippin, Charles Ross, Allington Pippin, and Beauty of Bath. The quantity of lime used was 75 lb. to a tub of 40 gallons, equivalent to a little over 1½ cwt. per 100 gallons, and the wash was applied liberally and when quite warm. As there was some waste in straining the wash, the proportion of lime actually put on the trees was not any more than 1½ cwt. per 100 gallons. A little more spraying will be tried with the proportion reduced to 1 cwt. per 100 gallons, and the wash will be allowed to cool before being applied. If any more scorching occurs, the spraying will be stopped altogether. Earlier spraying with lime even up to 2 cwt. per 100 gallons, done just before there was any show of leaf in the compact trusses of fruit buds, did not cause any scorching. *Southern Grower.*

CANTELOUP MELONS (see pp. 181, 202, 212).—Probably for the show table, and possibly for the market, large-sized fruits may be wanted, but for home consumption this is of little importance to me, where flavour is the essential. Vilmorin gives: Bellegarde, 12 to 15 cm. by 10 cm.; Prescott hâtif, 12 to 14 by 10 to 12, weight 800 to 1,000 g.; Noir des Carmes, 1 kil. to 1 kil. 500 (two per plant); Sucrin, 1 kil. 200 to 1 kil. 800 (two per

plant); Prescott fond blanc, 2 kil. 500 to 4 kil.; de Vauriac, "très volumineux et très lourds" (parentage Prescott fond blanc argenté); d'Alger, 2 to 3 kil. (two per plant). "un des plus rustiques," demi-hâtif; Chair verte, 1 kil. 200 to 1 kil. 500 (two or three fruits per plant); Noir de Portugal, 5 to 6 kil. (one per plant). Prescott hâtif and Noir des Carmes are especially recommended for forcing. He gives Italy as the country of origin of the Canteloups, and as regards other Melons says that they are derived from an unknown stock related to the "Melon de Perse"; about 1830, I find that there seems to have been a great rage for Persian Melons, but the names then used have dropped out or been replaced by others. Age of seed: Vilmorin gives the life as at least five and often more than ten years, but makes no recommendation as to age of seed to sow. Vercier says use seeds two or three years old. McIntosh (1839) writes that Miller advises three-year-old seed as the best, but states that he finds that ten, fifteen, and even twenty-year-old seed has been good and productive; finally, he does not advise less age than two or three years. Exposure in bags near a fire, or storage for months in a warm pocket about the person, seem to have been practices in vogue for younger seed. In 1911, of warm memory, I gathered some fifteen Canteloups from plants which only had the partial protection of cloches. *H. E. D.*

EARLY GRAPES FROM WORTHING.—As an old enthusiast in producing early fruit for the London season, I was interested in the paragraph on p. 211. My employer entertained largely in the London season, and I was required to produce all kinds of fruit as early as possible. On the occasion of the marriage of his eldest daughter, the Dowager Marchioness of Bute, April 21, 1872, I furnished ten bunches of Black Hamburgh Grapes averaging 1½ lb. each, with fair-sized berries and splendid bloom. They were grown on pot vines two years and four months old. I was congratulated by my Lord and his Lady. It must be remembered that the climate in Derbyshire is very different from that at Worthing. I am surprised that the cultivation of vines in pots for early Grapes is not more common in private and commercial establishments. *Wm. Irvine, 99, Quarry Hill, Tonbridge, Kent.*

DOUBLE-FLOWERED IVY-LEAVED PELARGONIUMS.—In the concluding sentence of his most interesting article on Nosegay and other Pelargoniums, your correspondent, *J. F.* (page 212), says: "The double-flowered Ivy-leaved Pelargoniums made their debut in 1878." He, however, makes a slight error in this, as the first of this section, König Albert, was put into commerce in 1875. It was raised by Herr Liebmann, of Dresden, Saxony. The late Mr. William Bull, of Chelsea, purchased half of the stock, carrying with it the exclusive right of selling it everywhere except in Austria and Germany. It will be found quoted in Mr. Bull's catalogue for 1875, the price being 15s. each. Two years later, namely, in 1877, Mr. Bull distributed some new double-flowered varieties of his own raising. They were seedlings from König Albert, and did not show any great departure from that sort, whose flowers were of a violet-pink tint. I have here referred to it in the past tense, as it seems to have long dropped out of cultivation. Soon after that M. Lemoine, of Nancy, and M. Crousse, of Orleans, sent out many new varieties, showing a wide variation in colour from those previously seen. The sturdier habit and bright tinted blossoms would almost suggest that some of the Zonal varieties had played a part in their production. This cross had certainly been effected some years before, for in 1869 first-class certificates were awarded to Willsii and Willsii rosea, both of which had single blossoms. They were in general appearance about midway between the Ivy and Zonal-leaved sections, but were never grown to any great extent, and ultimately disappeared. Probably the three most popular varieties at the present day are Madame Crousse, Souvenir de Charles Turner, and Galilée. None of them possesses the charm of novelty, as they were all put into commerce in the 'eighties of the last century. Madame Crousse was sent out in 1881, Souvenir de Charles Turner

in 1885, while Galilée, one of M. Lemoine's raising, made its appearance in the Jubilee year, 1887. Since then numerous varieties have been distributed, but they do not appear to have become so popular as the above-named three. The numbers of these that are disposed of in London alone must be enormous. *W. T.*

NOSEGAY PELARGONIUMS (see pp. 175, 188, 212, 225).—Mr. R. P. Brotherton seldom makes mistakes, but he makes one in relation to the bedding Pelargonium Lady Middleton. In 1851, as he rightly states, Donald Beaton left Shrubland. A few weeks after this event I commenced my gardening career in that celebrated establishment, and remained there till 1859 with three of Mr. Beaton's successors. I was mostly employed in the department for providing plants for the various flower gardens, and there were many of these of different styles in the pleasure grounds, which embraced 75 acres. I became an adept at propagating soft-wooded plants, and was made foreman of that department at the age of 17, and responsible for the raising of 100,000 plants. Lady Middleton was not a Nosegay variety, but a round-petalled flower of great beauty, and an excellent bedder. At about the same time Trentham Rose made its appearance, and the raiser of this claimed that Lady Middleton was identical with it. On testing the two together, it was found that though the flowers could not be told apart, Trentham Rose was much more vigorous, and the habit was not so good. The only Nosegays I remember were Pink Nosegay and Salmon Nosegay, both of which were very floriferous and showed up well after rain or rough weather. *Wm. Taylor, Bath.*

—The interesting letters upon the origin of Nosegay and other Pelargoniums raise the question of what was the first species to be introduced into England. This distinction probably belongs to *P. triste*, a tuberous rooted form, which is seldom cultivated. It is described by Johnson, in his edition of *Gerarde's Herbal*, as follows: "There is of late brought into this kingdom, by the industrie of Mr. John Tradescant, another more rare, and no lesse beautiful than any of the former (Storksbills), and hee had it by the name of *Geranium indicum noctu odoratum*; this has not as yet been written of by any that I know. I did see it in floure about the end of June, 1623, being the first time that it floured with the owner thereof." In the eighteenth century the Dutch imported several kinds from the Cape, and prior to 1725 six species were grown in a notable garden at Eltham. About a century later there were 102 species enumerated in the *Hortus Keucensis*. *P. triste* is still in commerce. Tradescant's name is in a sense justified owing to the fragrance given off by the flowers at night. This species has cup-shaped, black-bordered, greenish-yellow flowers; it continues to bloom for a long period, from early summer onwards, and its blossoms are highly perfumed. It succeeds well in a cold greenhouse, and seems to prefer a compost made up of leaf mould, loam, and silver sand. Like other tuberous-rooted subjects, water must be sparingly applied in the initial stages of growth. *George M. Taylor, Midlothian.*

EXPERIMENTS AND TRIALS.—After some years' experience of gardens in the South and South-West of England, with the usual long periods of drought in summer, very detrimental to the Potato, I adopted the following method of cultivation for that crop. The sets were planted 8 inches deep, by means of a dibber; they were not earthed-up subsequently, but grown entirely on the flat. This system has two advantages: 1. Rain goes straight to the roots; 2. the ground does not dry out nearly so quickly as when earthing-up is practised. My crop was quite 50 per cent. heavier than that grown in the usual way, and I have exhibited some of the largest Potatoes grown in the district. On light, sandy soils, such as one finds in Surrey, I shall never again earth-up main crops of Potatoes. *T. Bowser.*

THE CROWN IMPERIAL.—It is particularly appropriate that in the "Notes from a Cotswold Garden," p. 193, the Crown Imperial should be referred to as "The King of Spring Flowers." In "The Daughters of the Year," a series of monthly notes, which appeared in

the columns of the *Gardeners' Chronicle* some years ago, *Coryneus Senior* [the late Rev. W. Tuckwell, July 7, 1900, et. seq.—Eds.] said: "The Garden Queen of April is the Great Fritillary or Crown Imperial. . . . I well remember the sensation with which, as a child, I peeped into the flower and saw the six transparent teardrops hanging and ready to fall. Later, I found that Shelley had seen them too . . . and that tall flower that wets, &c., &c. It also bears a part in the myths which cluster round Christ's passion. . . . On a day in the Holy Week Christ walked through the Garden of Gethsemane all the flowers bowed the head. This alone stood stiff and unconcerned. The Saviour stopped and looked at it: tears like those of remorseful Peter flowed from its nectaries, and have never ceased to flow." *Jonathan Fiona, Ultima, N.B.*

THE HERB-GROWING ASSOCIATION.—Brief mention was made of this society in Mr. Horwood's article of last week. The organisation is now well advanced, and it is desirable that readers of the *Gardeners' Chronicle* should know what has been done. First—the society, only made known in January, now numbers 1,000 and odd members. Almost all of these are growing, or collecting, or arranging in their districts for the work to be done. Naturally, the growing can only have limited results the first year, but with the enthusiasm aroused, there is little doubt it will reach large proportions another season. A first drying and storage centre is started, and has already dealt with some of the drug herbs most urgently needed. This is on Bridge Farm, Byfleet, where a very commodious and properly constructed shed was erected a few years since for drying the tobaccos, of which experimental crops have been grown on this farm, an enterprise receiving a Government grant. Shortage of labour made it impossible to carry on this work during the war, and the building was offered to the Herb-Growing Association, which is now renting it. Several other places have been offered in different parts, and as funds permit more will be set going. As regards collecting, this is gradually being organised in centres with local secretaries, who will arrange, control, and act as intermediaries with the committees. What can be dried locally they will supervise; also send up in bulk the contributions of small growers or collectors. Orders from some of the leading firms have already been fulfilled. Financial support is needed to enable the Association to make a success of this effort to produce our own drug-plants. Not only our own, for application has come from Belgium, to know if there will be an overplus to supply that country. Up to the present most of the work has been voluntary, and the funds are provided by members' subscriptions and sale of pamphlets. But more substantial aid is needed to make all the extensions that are opening out. The office of the Association is at No. 7 (sixth floor), Queen Anne's Chambers, Westminster. *E. L. C.*

THE PLANTS' AWAKENING.—In a letter on this subject, which appeared in this journal (p. 224) last week, Mr. Bliss raises some objections to the criticisms which I had previously (p. 143) urged against the mimetic hypothesis, and the supposed light it might cast on the particular facts under consideration. Mr. Bliss, however, and doubtless without intention, attributes to me opinions which I did not maintain, and certainly have never held. I do not eschew theories, although I do endeavour to collect facts. But there are theories and theories—some are helpful and point the way to genuine investigation; others are inherently sterile, are in fact not theories properly so-called at all, but mere figments of the fancy and out of touch with realities. The so-called mimetic theory seems to me to belong to the latter class. Even if we were to admit the validity of the mimetic hypothesis, how would it profit us? There is doubtless much virtue, as there often is much obscurantism, in an unfamiliar word of Greek origin, but suppose we granted the plants' awakening to be the result of mimics we still should know nothing of any value about the matter. How much better off should we be if we admitted the unproven, and perhaps unprovable, hypothesis that the plant remembered and repeated the experience of its

ancestors, because external conditions had stamped engrams upon it, or, in other words, had brought about a more or less unvarying sequence of developmental changes which succeed each other in a rhythmical fashion? Should we not really be just as ignorant as before? What we want to know is the nature of the living stuff, and its relations to those conditions whereby the observed rhythmically recurring changes are produced. This is the kernel of the whole problem, and the mimetic hypothesis does not even touch the shell. Even if we narrow the issue, and put our faith in the more familiar formula "inheritance of acquired characters," we still are in the same fix, and that quite apart from the circumstance that no alleged example of such inheritance has yet been found which has stood the test of critical examination. I entirely fail to follow Mr. Bliss in his view that the only alternative "explanation" of the phenomena in question lies in the direction of certain theories more especially associated with the name of Prof. Weismann. The work of recent years has served more and more to prove that it is by a study of the chemical reactions and the special physical conditions which are imposed by protoplasmic texture that we are likely to make a real advance towards the understanding of plant life. Great advances have already been made on these lines, and we have every reason to expect much more in the future. But the path of experiment and analysis, though it has proved trustworthy in such difficult regions as breeding and physiology, is as yet strait and steep, and thus the broad road of fiction and imagination is still the way of the many, although the experience of the ages proves that it never approaches the garden in which grows the tree of knowledge. Let us then gather all the facts we can, and let us be very suspicious, especially of "comprehensive" theories, and above all of specious analogies, for they are almost invariably traps which are only too successfully set for the unwary. Theories are seldom more than scantily true; their proper and useful purpose is to group facts so that general conclusions may emerge, but since most people do not trouble themselves about anything save the conclusions it is all the more necessary that those who occupy themselves with theory should see to the testing of the foundations as well as the elaborated superstructure. And, above all, due deference must be accorded to the awkward facts that are difficult to fit, for these are commonly the most significant of all. *J. B. F.*

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

APRIL 18. *Present:* Messrs. E. A. Bowles, M.A. (vice-chairman), R. J. Elwes, A. W. Hill, A. Henry and F. J. Chittenden (hon. sec.).

Daffodil with double spathe.—Mr. Bowles showed a Daffodil with a stalk about 6 inches in length bearing a node from which sprung a linear, brown spathe about 4 inches long. In the axil of this was the ordinary scape about 10 inches in length, bearing the usual spathe and flower.

Varieties of Anemone nemorosa.—Mr. E. A. Bowles showed a series of wild forms of *Anemone nemorosa* illustrating the wide variation this species exhibits. The series included the form known as *Robinsoniana*, which was probably introduced from Norway; a beautiful blue form with prettier buds than has *Robinsoniana*, called *purpurea*, found at Pau by Grant Allen; a bluish early form, earlier than *Allemii*, and a form from the Lismore woods collected by Miss Curry; Lady Douerale's form, which appears to be common in Ireland, with pinkish flowers of large size and good substance; a pink form from the Cotswolds with pink buds; a fine white form with pink back and purplish leaves; an early pink form and a late one and a pure white form with round flowers. He also showed *A. ranunculoides* and a pale form of it called *pallida*.

Fritillarias.—Mr. H. J. Elwes showed a series of *Fritillarias*, including a fine form of *F. imperialis* with very large orange flowers

called *grandiflora* (or *maxima*), but distinct from the maxima of many nurseries, and of slow increase; the inodorous form, and several fine variegated varieties. *F. latifolia* was represented by a long series of colour forms and, unlike *F. meleagris*, apparently always one-flowered. The latter often, under cultivation in good soil, bears several flowers. *Fritillaria obliqua*, with very dark purple flowers, was also exhibited. It is remarkable among flowers of its colour for its sweet scent.

NATIONAL CHRYSANTHEMUM.

METHODS OF PLANT BREEDING, WITH SPECIAL REFERENCE TO THE CHRYSANTHEMUM.*

APRIL 17.—At the meeting of the Chrysanthemum Society held on Monday, the 17th inst., Dr. Keeble gave a lecture on the above subject. The first part of the lecture consisted in an account of the Mendelian method of studying the mode of inheritance of plant characters. Taking leaf shape of *Primula sinensis* as an example of a simple Mendelian character, the lecturer showed that this character—like many others—follows a rigidly definite and simple mode of inheritance. When a plant pure for the "Palm-leaf" character is crossed with a Fern-leaved plant the offspring are all Palm-leaved; that is to say, the Palm-leaf character is dominant. When such Palm-leaf hybrids are self-fertilised or crossed with one another they yield offspring of which three in every four have Palm-leaves, and the remaining plant of the four has the Fern-leaf character. Thus the latter character, lost, to all appearances, in the first generation, reappears in the next, and hence is known as a recessive character. After describing how the ratio of 3:1 in the second generation is to be explained, the lecturer gave an account of the essential facts concerning the production of the reproductive cells and their fusion in pairs to form the individual plants (zygotes) of the next generation, and showed that the reproductive cells are single in nature; that is, either carry the factor for a plant-character or do not carry it. The zygote, on the other hand, is dual in nature. Formed by the fusion of two germ cells, the zygote and all the cells of the individual to which it gives rise is dual in nature, in the sense that it carries factors derived from each parent. Hence, in the case of the cross Palm-leaved × Fern-leaved the mode of inheritance may be expressed thus, writing L for Palm-leaf and l for fern leaf:—

L	×	l	Germ cells.
Ll			Zygote.

Male germ cells.	Zygote.	Female germ cells.
L	L—L	L
L	L—L	l
l	l—L	L
l	l—l	l

That is to say, one in every four plants of the second generation has the constitution LL and is (homozygous) pure for Palm-leaf, two have the constitution Ll and are heterozygous for the character, and one has the constitution ll and is pure for the absence of Palm-leaf, and hence breeds true to the Fern-leaf character. Inasmuch as in this case one "dose" of the dominant factor L suffices to cause the plant to exhibit the Palm-leaf character, there are produced in the second generation three Palm-leaf to one Fern-leaf.

From the practical point of view this fact, that plants may look alike and yet have different constitutions and behave differently when used for breeding purposes, is of considerable importance. Examples were given of the way in which it is possible to unite in one plant, in the course of two generations, characters exhibited one by one plant and one by another. In simple cases, at all events, no selection is needed for this purpose; all that is necessary is to raise a fairly large second generation, and if the characters which it is required to combine are dominant characters, to self-fertilise a dozen or so of the plants showing the desired combination, when one or more will be found to breed true.

* Lecture delivered before the members of the National Chrysanthemum Society by Dr. F. W. Keeble, F.R.S.

In the second part of the lecture the application of Mendelian laws to the Chrysanthemum was considered. It was suggested that sporting was due to the segregation of characters from plants of heterozygote constitutions, and the idea was put forward that the reason why sporting is so conspicuous in the Chrysanthemum is to be sought in the fact that growers, by "taking" crown or terminal buds, delay the actual formation of flowers long after the plant is ripe to flower. In this condition it is not, perhaps, unreasonable to suppose that the cells of the plant, when producing flower-buds, sometimes undergo the same sort of division, known technically as a "reduction division," as they do when producing germ-cells. Since segregation is the unvarying rule in germ-cell production, a similar vegetative segregation would result in the sporting branches. The order of sporting, as evidenced by the records, gives some support to this view, as does also the recorded statement that side shoots throw the largest number of sports. Thus white—which is in all probability dominant white carrying but suppressing colour—often gives yellow, but yellow does not give white. So also red—which is the next stage to yellow, and is produced by the action of some factor on yellow—often gives yellow, but yellows do not give reds. The large majority of new things produced by cultivators are due to the loss of factors, and so, in the above cases, if, for example, a plant is heterozygous for red, and if there is good reason to believe yellow must be present for red to be formed, the constitution of a sporting red may be represented thus:—

R r Heterozygous for red
Y Y

If vegetative segregation occur we shall get a branch of the constitution—

r
Y Y

which, in the absence of red (R) will bear yellow flowers. The lecturer suggested that if the Chrysanthemum be derived from *C. indicum* and *C. morifolium*, red and other sap colours are supplied by the latter, that in *C. morifolium* colour formation is suppressed owing to the presence of an inhibitory factor lacking in *C. indicum*, and that if this be so it should be possible to produce the great range of colours of the Chrysanthemum by raising a large F_2 generation of the cross *C. indicum* \times *C. morifolium*. The natural occurrence of lilac flowers in *C. morifolium* gracile gives support to this hypothesis, which is being tested at Wisley.

The lecturer concluded by urging the desirability of co-operation between the raisers of Chrysanthemums and the scientific experts, and offered, if growers would, on their part, keep careful records of crosses according to an agreed schedule, to analyse their results and put them at the disposal of the Society—an offer which was accepted with enthusiasm by the members of the Society. An interesting discussion followed the lecture.

LINNEAN.

APRIL 6.—Dr. O. Stapf, F.R.S., showed a series of maps and lantern-slides explaining the presence of the southern elements of the British flora. He referred to H. C. Watson's terms, "British, English, Atlantic, Germanic," etc., proposed in 1835, and employed in his *Cybele* in 1847; the term "Atlantic" defined by him "as having reference only to distribution within Britain" was unfortunate as confining the conception to the British flora as a detached item from the Continental flora. The year before the first volume of Watson's *Cybele* appeared, Edward Forbes issued his remarkable address on types of distribution, undoubtedly inspired by Watson's preliminary essay, but he had a wider grasp of the subject, and basing his remarks upon geological causes, divided the native plants into five groups. The group least represented occurs in the mountains of the west and south-west of Ireland, allied to species found in the north of Spain; he specified twelve, but reduced to the modern concept of species, they are the following nine:—*Saxifraga Geum*, *S. umbrosa*, *S. hypnoides*, *Erica Mackaiana*, *E. mediterranea*, *Daboecia polifolia*, *Arbutus Unedo*, *Pinguicula*

grandiflora, and *Arabis ciliata*. He further referred to others found in the Channel Islands. The first group he termed "Asturian," the second "Gallican" types. He showed that the derivation was due to a former land-connection, unsubmerged during the Glacial Epoch. Engler held that the reimmigration of the Atlantic element took place in post-glacial times, and Dr. Scharff dealt incidentally with it in his chapter on the Lusitanian fauna published in 1899. The subject assumed greater prominence at the British Association Meeting at Portsmouth in 1914, when Mr. Clement Reid gave an address on the relation of the present plant population of the British Isles to the Glacial Period, and contended that no temperate flora could have survived the rigours of that time, but that the present flora came in towards the end of the period.

Dr. Stapf showed that two classes of plants became evident as the work went on: one, such as had their Continental areas in Western France and the Iberian Peninsula, and the other, those ranging beyond these limits over North Africa, and the Mediterranean as far as the Caucasus and Syria. The first may be called "Atlantic" in a restricted sense, the second "Mediterranean," both together as "Southern." The complete list was drawn up by comparing the last editions of Babington's *Manual* with Koch's *Synopsis*, with a few necessary restrictions, but excluding *Hieracium*, *Rubus*, and *Rosa*. In this way 1,599 species remained, of which 150 answered to the definition of Southern elements, or about 10 per cent. These were traced in their distribution, and the result recorded in the maps shown. The littoral species, amounting to fully one-third of the Southern elements, must affect the cartographic result; the inland or non-littoral Southern species of the British flora number 95, one-half following the Atlantic, and the other half the Mediterranean type of distribution.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

APRIL 10.—The monthly meeting of this society was held at the R.H.S. Hall, Westminster, on Monday, the 10th inst. Mr. Chas. H. Curtis in the chair. Two new members were elected. Eleven members were allowed to withdraw interest from their deposit account, amounting to £41 0s. 4d. The sum of £82 8s. 2d. was passed for payment to the nominees of three deceased members. The sick pay for the month on the ordinary side amounted to £96 2s. 11d., and on the State section £45 10s., maternity benefit £9, and the quarterly payments to chronic sick to £15 8s.

ROYAL METEOROLOGICAL.

APRIL 19.—The usual monthly meeting of this Society was held at 70, Victoria Street, Westminster, Major H. G. Lyons, D.Sc., F.R.S., president, in the chair.

Mr. E. V. Newham, F.R. Met. Soc., read a paper entitled "The Persistence of Wet and Dry Weather." The rainfall records of Greenwich, Kew, Aberdeen, and Valencia had been examined in order to find out how often rain falls on the day following successive runs of 1, 2, 3, etc., wet or fine days. The common notion seemed to be that after a long run of wet days the chance of a fine day becomes greater, but statistics do not support this conclusion. Generally speaking, the expectation of rain on any day has been found to increase rapidly as the number of previous successive wet days increases, and to diminish with the number of successive fine days in the past. After very long spells of either kind the expectation of further rain reaches a practically steady value. The same conclusion holds for the expectation of rain in a given hour after different runs of wet and dry hours. In illustration, some of the results may be quoted: At Valencia, after seven days of drought, rain falls on the eighth day 24 times out of 100, but after seven rainy days 86 times. For Kew the corresponding increase is rather less, namely, from 27 to 73.

EDINBURGH BOTANICAL.

APRIL 13.—At a meeting of this society, held in Edinburgh, on the 13th inst., two communications on Rhododendrons were contributed by Professor Bayley Balfour. The first dealt with *R. trichocladium*, from Yunnan, and four allied species of close affinity. All have yellow flowers. The other paper dealt with *R. lacteum* and its affinity to *R. fico-lacteum*, a new species. New species of *Dracocephalum* from China were exhibited by Mr. G. Forrest and Mr. W. W. Smith. A series of specimens of the flies injurious to Narcissi and other bulbs were shown by Mr. C. Nicholson.

PERPETUAL-FLOWERING CARNATION. REGISTRATION OF NEW VARIETIES.

THE following new varieties have been registered by the above Society. The descriptions are those supplied us by the secretary:—

Malcolm, a seedling of cherry-red colour; the flowers are fragrant, and the plant has a good habit. Misses Price and Fyfe, Birchgrove.

Grizel, a purple seedling; the blooms are scented, and the habit of growth is good. Misses Price and Fyfe.

Edward Page, a seedling with bright rosy-cerise flowers. The plant has a robust habit, and is recommended as a market variety. Thos. Page, Hampton.

Mrs. Constable Curtis, a seedling of claret colour; recommended for summer blooming. Young and Co., Cheltenham.

Grace D. Page, a seedling variety of rosy-cerise colour and good habit. W. H. Page, Hampton.

LAW NOTE.

ROYAL BOTANICAL GARDENS, MANCHESTER.

THE gardens at Old Trafford belonging to the Royal Botanical and Horticultural Society of Manchester, being too close to the city of Manchester with its deleterious atmosphere to be suitable for the purposes of a botanic garden, the committee desire to sell the land, some fourteen acres, and remove elsewhere. The society continue to hold exhibitions on the ground, and for some time it was leased to a company (which subsequently had to be wound up), known as the White City, Ltd. The society therefore decided to dispose of the property, and, if possible, acquire some land for the purpose for which it was originally intended in a more favourable position; but before this could be done it was necessary to bring the matter before the Palatine Chancery Court in order that the point might be decided whether or not the society was a charity, or came under the Literary and Scientific Institutions Act of 1854. After hearing considerable evidence the Vice-Chancellor made an order that the society was not a charity, and therefore not subject to the restrictions attaching to charitable societies.

DEBATING SOCIETIES.

BATH GARDENERS. At the meeting held on the 15th ult., the secretary, Mr. H. Sparrey, read a paper on "Insect Pests." The difficulty which insect pests presented to the gardener, said Mr. Sparrey, was increased at present, when so many gardens were insufficiently staffed. One of the commonest of insect pests, in his opinion, was the aphid, which appeared in the early spring. In mild weather this might be easily eradicated by syringing with a suitable preparation, but in frosty weather this could not be done. Another pest was the black aphid, which generally appeared early on the tips of young cherry growths. A good plan was to nip off the affected points. For the destruction of "American blight" the smearing of the affected parts with soft soap was recommended. The Cherry fly generally appeared during drought, but if the plants were healthy, never allowed to get dry, and dusted occasionally with soot, or syringed with tar water, the mischief might be checked. The ravages of the Onion maggot had lately been reduced by the practice of sowing the seed in boxes, and transplanting the seedlings in a well-prepared bed.

At the meeting held on the 10th inst. Mr. J. D. Halliburton, Superintendent of the Royal Victoria Park, Bath, gave a lecture on "Ornamental Trees: Their Care and Management."

Obituary.

J. GURNEY FOWLER.—British horticulturists will learn with profound regret of the death of Mr. J. Gurney Fowler, member of Council and treasurer of the Royal Horticultural Society, and chairman of the Orchid Committee. His mortal illness was of tragic brevity; little more than a week ago Mr. Fowler was full of vigour and activity; but an attack of influenza, followed by bronchitis and inflammation of the lungs, resulted in heart failure, and he died suddenly at Brackenhurst, Pembury, on Monday night last. Thus, in the prime of life, one of the most conspicuous personalities in the world of horticulture, and one of its truest and wisest friends, has been taken from us. Tall and burly, and brusque of speech, Mr. Gurney Fowler was as a tower of strength to the Royal Horticultural Society, and that strength was founded, as all moral strength is founded, on character. Direct, downright, and possessed of the simple charity of mind that accompanies high character, Mr. Gurney Fowler had the Englishman's impatience of mere words and his love of action. Cautious, as becomes a man of high position in the financial world, he had that finest and most fertile kind of wisdom which springs no less from the heart than the brain. Fairness of mind was so characteristic of him as to appear to be instinctive. Never was that fairness shown more conspicuously than on those occasions when good arguments were urged against some course of action to which he was inclined. On such occasions he would sweep away his own proposals with scarcely any ceremony.

Mr. Gurney Fowler had, moreover, that rare quality for which there is no English word. The French call it *bonté*. At no time was this charming side of his character more clearly revealed than when he had gardening visitors at Brackenhurst. As a host, Mr. Fowler was content to walk with his visitors through his wonderful Orchid houses and to show them just so much as and no more than they cared to see. Though, and with reason, proud of his plants, he never vaunted them. His Orchid collections at Glebelands had long been famous, and the success with which he met when four years ago he removed them to the clearer air of Pembury has been recorded in these pages. The awards which he gained at the great exhibitions gave him great pleasure, and that pleasure he showed so simply and modestly that all shared it with him. His tastes were not confined to Orchids, and his garden at Pembury was just growing into one of the most beautiful in the country.

Mr. Gurney Fowler's services to horticulture are great and will endure. He gave them lavishly. His knowledge of finance and general business was put at the disposal of the Royal Horticultural Society, and the ablest members of the Council recognised in him a master in financial matters. His services to International Horticulture were no less conspicuous, and his work on behalf of the Great International Exhibition of 1912, when he was chairman of the Board of Directors, would have overtaxed the powers and outworn the patience of most men.

One by one the great figures in the horticultural world are passing. To them and to the fine work they have done the younger men owe it to emulate their example, and to see to it that the progress of British horticulture, which we owe in large measure to men such as Mr. Gurney Fowler, shall be sustained during the difficult years that lie before us.

ANDREW PATERSON.—We regret to have to record the death of Mr. Andrew Paterson, gardener to Lady Dundas, Arniston, Midlothian, on the 20th inst. Mr. Paterson was in the service of the family for more than forty years. After serving as foreman at Arniston under the late Mr. Colin McTaggart for some years he was appointed gardener at Polton, and on the retirement of Mr. McTaggart some years ago, Mr. Paterson succeeded him as gardener at Arniston.

ROBERT N. HANAGAN.—We learn with regret of the death, on April 12, of Mr. Robert Hanagan, gardener at Castle Park, Frodsham.

ANSWERS TO CORRESPONDENTS.

* *A report of the annual conference of the British Gardeners' Association is unavoidably held over.*

ACACIA IN A CONSERVATORY: *H. P.* Acacia dealbata is the most vigorous of all the Australian Wattles. The plant cannot be recommended for pot cultivation as it does not flower freely until it has attained a considerable size, but when planted in the border of a large conservatory, and allowed plenty of head room, it should flower freely each spring. The compost in which your plant is growing is suitable. Imperfect drainage may be the cause of the young leaves dropping. Pruning should be done immediately after flowering; cut the stronger shoots hard back, but retain all the weaker ones. During the summer and autumn syringing the plant with clear water in the morning will help to keep the



THE LATE J. GURNEY FOWLER.

foliage healthy, and the roots require much water. Plenty of sunlight, with a free admission of air, whenever the temperature exceeds 45° is necessary. The tree is usually propagated from imported seeds. Cuttings are difficult to root, but grafting on some other strong-growing species, such as *A. longifolia*, is sometimes practised. With regard to other climbers for your conservatory *Acacia leprosa*, *Abutilon megapotamicum*, *Cestrum aurantiacum*, *Cestrum elegans*, *Cantua bicolor*, *Cassia corymbosa*, *Clematis indivisa*, *Cobaea scandens variegata*, *Clianthus puniceus*, *Fuchsia simplicifolia*, *Hibbertia dentata*, *Passiflora coerulea*, *Rhodochiton volubile*, *Rosa Banksii*, *Tasmania Van Volxemi*, and *Solanum crispum* are suitable.

BOOK: *A Cannon.* Two cheap works of the nature you require are *Insects Injurious and Useful*, by L. C. Miall, price 3s. 10d., and *Insect Life*, by J. H. Fabre, price 2s. 11d., free by post, from our Publishing Department.

EUCHARIS GRANDIFLORA: *Nil Desperandum.* You will find a description of the treatment and cultivation of *Eucharis grandiflora* in the issue for May 8, 1915, page 256.

FARM WORK FOR WOMEN: *Miss D.* Send your name and address, with exact particulars of the sort of work you are willing and able to do, to the nearest Labour Exchange. You would probably find it advantageous to call there in person and ascertain what work would be available, and what sort of labour is most in demand.

HUMEA ELEGANS AND PEACHES: *A. R.* You are right in your recollection that the subject of the influence of *Humea elegans* on Peach trees has been discussed in these pages. It formed the subject of a number of letters published in the issues for September 12, 19 and 26, October 3, 10 and 17, in which a number of interesting facts were elicited. It was stated by several gardeners that the presence of a few plants of *Humea elegans* in the Peach house was sufficient in twenty-four hours to cause withering or scorching of all the younger leaves of the Peach trees, which afterwards fell.

NAMES OF PLANTS: *Gard.* 1, *Picea polita*; 2, *P. excelsa* var.; 3, *P. orientalis*.—*J. B. B.* *Pelargonium tomentosum*.

PEACH BLOOM FAILING TO SET: *Silignum.* You are not alone in failing to secure a good set of Peaches this season, for several correspondents have written complaining that their Peaches and Nectarines have dropped their flowers without setting fruits. This may be due to the unfavourable weather; in cold, wet weather the atmosphere is not sufficiently buoyant to disperse the pollen grains. For this reason most growers advocate the use of a little fire-heat at blossoming time. It is scarcely likely that the fumes you mention are responsible for the trouble.

PHAIUS FLOWERS DAMAGED: *D. F. A., Workshop.* Flowers of the *Phaius grandifolius* section often have black markings, as in those you send. The markings are due either to an accumulation of moisture on them at some time during their formation, or to attacks of insects. The larger of the black blotches on the flowers are due to excessive moisture, and the tracery on the backs of the sepals to thrips or aphids, some of which were present on the flowers when they reached us.

SHRUBS FOR FORCING: *Subscriber, Norway.* In selecting hardy shrubs for forcing choose well-shaped specimens freely set with flower-buds. Early in November lift the plants from the open and pot them in a rich compost, placing them outside again for a time. Those subjects which naturally bloom early are the first which should be taken into the forcing house, leaving the late-flowering kinds until January. In forcing do not subject the plants to too much heat, otherwise much injury may be done to the buds. At the commencement a night temperature of 50° to 55°, with a rise of from 5° to 10° during the day will suffice. As the plants break into bud the night temperature may be increased gradually to 60°. Lilacs, however, may be grown in a temperature of 70° to 75°. *Paeonia Moutan* will respond to gentle forcing, and may be had in flower early in March. It is, however, doubtful whether this plant would prove profitable for your purpose. The following shrubs are all suitable for forcing in pots: *Azalea amoena*, *A. mollis*, Ghent azaleas, *Deutzia gracilis*, *Forsythia suspensa*, *Kalmia latifolia*, *Kerria japonica*, fl. pl. *Hydrangea paniculata*, *Magnolia stellata*, *Prunus Persica*, *P. triloba*, fl. pl. *P. serrulata*, *Pyrus floribunda*, *P. spectabilis*, *Spiraea prunifolia* fl. pl., *S. Van Houttei*, *Staphylea colchica*, *Weigela rosea*, *W. Eva Rathke*, and *Xanthoceras sorbifolia*.

Communications Received.—*J. Williams*,—*H. W. B.*—*J. B.*—*Sir H. M.*—*G. W. B.*—*M. & Co.*—*S. & S.*—*C. H. P.*—*H. J. E.*—*A. J.*—*G. M. T.*—*G. H. W.*—*J. S.*—*H. S. T.*—*W. B. H.*—*J. T. W.*—*S. A.*—*W. K.*—*M. B.*—*J. A.*—*J. T.*—*Barford*—*H. W. B.*—*London*.—*A. H. B.*—*T. C.*—*D. M.*—*W. T.*—*W. L.*—*Mrs. M.*—*H. A. C.*—*H. S. T.*—*W. F. R.*—*S. A.*—*A. W.*



THE

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NOTES FROM A COTSWOLD GARDEN.—VI.

WHEN I last wrote the snow lay deep. Though the gale only lasted for twenty-four hours, I think I am justified in saying that it has done more damage to trees in my immediate neighbourhood than any gale during the last sixty or seventy years, because the snow was so wet and clinging that far more trees, both old and young, were broken off in the middle, or lost their tops, than were uprooted. No species has suffered so much as the Common Spruce, a tree which has been most unduly praised by many foresters, but which, in my opinion, should be no longer planted as a forest tree except in very special localities. As an ornamental or shelter tree it is far less valuable than many others, because on deep soils where it grows fast, it forms coarse, knotty, inferior timber, and on dry soil it grows slowly and soon decays at the heart. Ash, Beech, Larch, and Sycamore resist wind much better, and their timber is much more valuable. Poplars have suffered considerably, and even Scots Pine, especially those raised from New Forest seed, have in my planta-

tions had their tops broken off by the weight of snow. Lawson and Nootka Cypress, and Thuya plicata have come through the ordeal wonderfully well, for where their branches hold the snow they bend but rarely break, and I feel confirmed in the opinion which I have often expressed, that these three trees will eventually prove much more valuable for general forest planting than some of the species which Lord Selborne has lately advised us to sow. I hope that nurserymen who must now be left with stocks of forest trees which cannot be planted out or transplanted for want of labour, will take the opportunity of clearing out a quantity of those which have for many years appeared in their catalogues as forest trees, but which have not, and never had, any



FIG. 102.—MORAEA SPATHACEA.

(See p. 242.)

value for economic or even for ornamental planting. What is the use of going on growing such things as Abies balsamea, Picea nigra, or Colorado Douglas Fir? I should like to add Japanese Larch, but fear that many persons will not yet agree with me, though I am confident that some day they will find out their mistake. It is impossible to estimate the amount of damage due to the snowstorm, but I expect that it will take me a year at least, and cost treble the value of the timber, to clear up and remove the broken and uprooted trees on this estate. Though such gales may only occur once in a lifetime, yet we have also to remember such winters as those of 1860 and 1879-80, such droughts as those of 1893 and 1911, such May and June frosts as occurred last year; and when the

losses caused by all these calamities are reckoned up, we shall find that in very many places the profits of planting, as estimated by writers on the subject, are by no means so sure in practice as they are made to seem on paper. So I gladly come back to the garden, where the prospects are now much brighter. Instead of a very early season, as it seemed two months ago, it is on the other hand a late one. The only bulbous plants which seem much injured are the early-flowering species of Tulips, whose leaves are terribly damaged and the flowers often crippled. The most beautiful sight in my garden during the last month has been a border forty yards by five, which is planted with Roses and herbaceous plants, in which nearly forty years ago I placed three of the first bulbs of Chionodoxa Luehiae brought from Asia Minor by George Maw. These have now spread by seeding over the whole border and form a sheet of blue; no weather hurts them; the more you dig the more they spread; and though it has become a genuine weed which I do not think even summer-fallowing would eradicate, I can honestly say that it is the most beautiful weed that I know, and as the foliage dies down so early it is not harmful to any other plant. The finest bulbs, which have often twelve or more flowers on a spike, are so deep in the soil that they are difficult to get up, and, coming up later than those near the surface, prolong the blooming period for at least a month. I remember well that when I first showed this plant on Mr. Maw's behalf to the Floral Committee of the Royal Horticultural Society it was rejected with scorn as of doubtful hardness, and very inferior to the common wood Hyacinth. I wonder whether any of those gentlemen are still alive and what they would say of it now? But such has been the fate of other good things, and if we look over the catalogue of plants certificated by the Society since 1860, how few shall we now find that will hold as high a place in general estimation as this! Another bulbous plant which has no certificate, but which surpasses all other dwarf Fritillarias in its vigour and in the variation of its flower, is F. latifolia. I saw a lot of these varieties in a Dutch garden forty years ago and selected about eight of them, which are now in full beauty. I cannot believe that they all sprang from a common origin, as the foliage of some differs considerably from that of others; but they all flower at the same time, have larger flowers than any of the dwarf species, and in my soil increase rapidly and want no care. Whether these varieties have originated from the plant figured in the Bot. Mag., t. 1538, as F. latifolia var. lutea, which is a native of the Central Caucasus, I do not know, as it has not been recently introduced from that region; but like many Caucasian plants, it seems hardier and easier to grow than many of its Asia Minor congeners.

Tecophilaea cyaneo-crocea (often incorrectly called cyano-crocus) is one of the loveliest of early spring bulbs and grows readily here in a frame or in a pot, but

is too small and delicate for the open ground. It is one of the few bulbs of the Andes which I have been able to keep in health for a long period, and should be much commoner than it is. The corms, which resemble small, flattened Crocus bulbs, increase by off-sets, and Mr. Godman grows it freely from seed. It belongs to the family of Haemodoraceae, of which few, if any, species in cultivation are so showy; and when the deep-blue form described by Baker as var. *Regeli* is mixed with the paler but very brilliant

are very similar, has leaves five or six feet long, persistent through the winter, and narrower than those of what I grow as *Diets Huttonii*, a plant whose leaves are only about two feet long. The bright-yellow flowers remind one of those of *Iris juncea* (*Xiphion junceum*), and the pedicels lengthen very much after flowering. If planted deep enough in the warmer parts of England, I think this plant will be a popular one, as it has a more vigorous and robust constitution and seems to be hardier than *Diets Huttonii*.

seven years ago, *Persephone* and *Sirona* have increased, and will flower freely in about a fortnight; *Psyche*, *Felicitas*, *Thalia*, *Brünhilde*, *Artemis*, and *Hecate*, on the other hand, though all grown in the same frame, have either died or lost their vigour. It would be interesting to hear from Mr. Hoog, who raised them, whether in Holland they show the same variation in vigour. Another plant which grows with Mr. Dimsdale under what seem most unpromising conditions, is *Gentiana verna*. Planted against the stone edging of a walk in the stiff calcareous clay, which both here and in other Cotswold gardens suits *Gentiana acaulis* to perfection, though it is subject to drought in summer and excessive wet in winter, *G. verna* was more vigorous than I have ever seen it elsewhere. The more one sees of plants under very unlikely conditions, the less one seems able to predict what will, and what will not, suit them. Another interesting plant raised by Mr. Dimsdale is a hybrid between *Meconopsis paniculata* as the male, and *M. integrifolia* as the seed-bearing, parent; the foliage, though varying, is intermediate between the two parents. *H. J. Elwes.*

TREES AND SHRUBS.

VIBURNUM CARLESII.

This is a valuable early-flowering shrub from the Orient, and one of the very best among the large number of *Viburnums* in cultivation. Several plants here are, at the time of writing, in full flower. One plant especially, grown as a half standard at Aldenham, is most attractive, being covered with numerous trusses of deliciously scented, pearly-white flowers, the individual blooms reminding one of a well-grown *Bouvardia*. This particular plant has for a background a fine specimen of *Pittosporum tenuifolium*, which gives an additional charm by its association. Unfortunately, there are two varieties of *Viburnum Carlesii* in existence, of which one is much inferior to the other. The species was introduced to this country from Japan in 1902.

OSMANTHUS DELAVAYI.

This beautiful early-flowering shrub was introduced from China in 1890. The plant flowers freely during April, and is suitable alike for training on walls or as bushes. It makes a splendid pot plant for growing in a cool house, producing a wealth of refined, white blossoms. So far the plant has proved perfectly hardy with us, and if its hardiness is assured there is very little doubt that the species will become very popular as a small shrub. *Edwin Beckett, The Gardens, Aldenham House, Elstree.*

ORCHID NOTES AND CLEANINGS.

LAELIO-CATTLEYA CORNELIENSIS.

MR. H. CHANDLER, gardener to the Earl of Craven, Coombe Abbey, Coventry, sends six flowers of this charming hybrid raised by him between *Laelio-Cattleya Haroldiana* (*L. tenebrosa* × *C. Hardyana*) and *Cattleya Schröderae*, the blooms exhibiting well the beauty and variation in colour in this delicately-tinted hybrid, all the forms of which are large and of fine shape. No. 1 has pale-primrose-coloured sepals with slight purple lines, the petals being bluish-white with primrose colour between the pale purple veining, the lip is rose-coloured with a yellow disc. No. 2 is lighter in tint and without the pale purple veining, the lip having yellow lines running into the disc. No. 3 is similar, but with a darker yellow tint. No. 4 is the best form, and measures seven inches across, the petals being three inches wide. The colour is peach blossom with slight rose veining, the fine lip, which is three inches across, being rosy mauve veined with a darker tint of the same

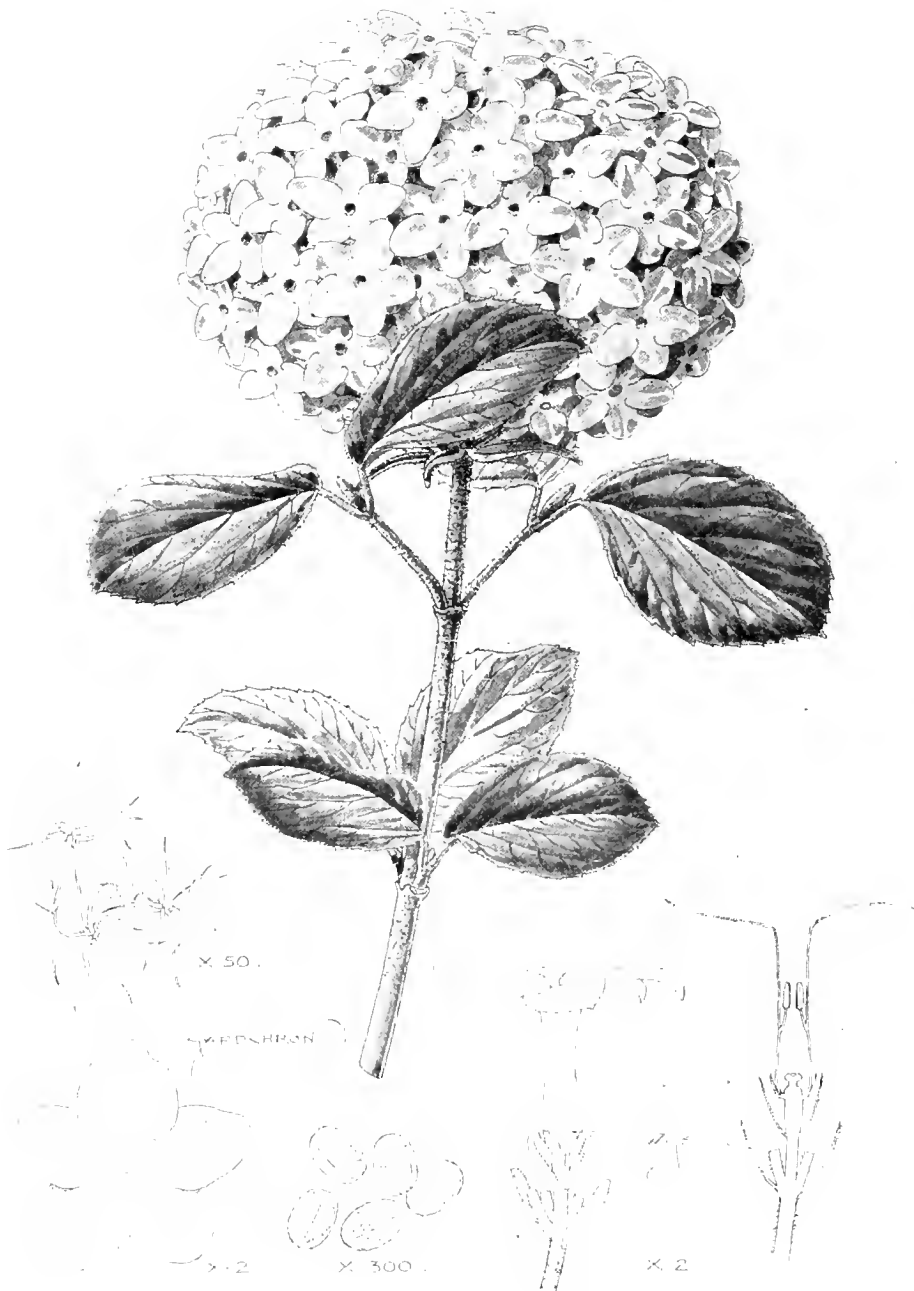


FIG. 103.—*VIBURNUM CARLESII*; FLOWERS WHITE AND FRAGRANT.

blue flowers of the more common form, it surpasses anything of its size that I know.

A handsome plant which is little known, and is perhaps not yet named, was given me some years ago by Mr. Grove, who received it from near Johannesburg, and has grown it in the open ground. I flowered it in a pot and raised some seedlings from it which were planted out in the bed of my Alpine house, and are now flowering profusely. The plant was named at Kew *Moraea pathacea*, which has been figured in *Bot. Mag.*, t. 6, 174, under the name of *Diets Huttonii*, and comes from the eastern province of the Cape Colony. My plant, though its flowers and habit

During a recent visit to Mr. Dimsdale's very interesting garden at Eastleach I saw the finest specimen of a pot-grown *Iris* that I ever saw, in the shape of one of Van Tubergen's *Regelii*-cyclus hybrids, which had been potted four years before, and now bore seventeen flowering spikes in an eight-inch pot. As these very beautiful hybrids are difficult to grow in the open or in frames, because one cannot dry them off for a long enough period to stop them from growing too early in spring, I intend to follow his example. I find, however, that they differ greatly in constitution; of the eight varieties that I started with six or

colour, whilst the base and centre of the lip are coloured orange. Nos. 5 and 6 have little trace of yellow in the sepals and petals, but the label-lums are enriched by deep yellow markings and disc.

Cattleya Schröderae appears strongly in the good shape and substance of the flowers, and *C. Dowiana aurea*, through *C. Hardyana*, produces the charming shades of yellow in varying degree.

Mr. Chandler showed the hybrid at one of the Royal Horticultural Society's meetings in 1914 when not fully developed. He remarks, "We have flowered perhaps eighty plants, and so far have not flowered two alike."

DENDROBIUM FUSIFORME.

A FINE specimen of this rare Queensland species was shown by Messrs. Armstrong and Brown, Orchidhurst, Tunbridge Wells, at the meeting of the Royal Horticultural Society on the 18th ult. The plant bore ten gracefully arranged spikes of cream-white flowers, averaging twenty to thirty to the spike. The species is allied to the varieties of *D. speciosum*, from which it is distinguished by its fusiform-shaped pseudo-bulbs and floriferous habit. The plant was illustrated in the *Gardeners' Chronicle*, May 25, 1907, p. 537, from a specimen which flowered in the late Sir Chas. W. Strickland's collection, and in the accompanying note particulars of the history of the section and its cultural needs are given. The species of this section thrive better, as a rule, when grown in a warm greenhouse or conservatory than they do in the Orchid house, whilst a period in a sunny position in the open in summer, or in an airy fruit-house, tends to facilitate free production of flowers.

SCALE INSECTS.

IN all branches of natural history there is perhaps no section which arouses greater interest at the present time than entomology, or the study of insects. Time was when the student of insects was looked upon as a very harmless individual who caught insects and set them out in neat cases. This aspect is still of importance as a systematic study of the subject. There is, however, the economic aspect of the question in so far as insects are associated with our crops in garden, field, or forest; and also with our domesticated animals, and even with man himself. As regards the latter aspect, it may be noted that recent scientific investigations have proved that insects are instrumental in disseminating or transmitting special diseases.

As regards the economic aspect, as associated with garden or forest, there is, perhaps no class of insects more puzzling to the practical man, and at the same time more interesting to the entomologist, than the Coccidae, or Scale Insects. They are puzzling to the practical man because the minute characters which separate one species from another can only be ascertained by microscopic investigation; and unfortunately the methods of microscopical manipulation are not often understood by practical men. They are equally interesting to the entomologist, because they present structural characters and peculiarities in life-histories which are entirely different from those of other insects.

Scale insects belong to the sub-family Hemiptera-Homoptera, and are thus closely associated with the Aphididae, or plant lice. It is well to bear this close relationship of the aphids in mind because the very obscure characters of the scales often convey an impression to practical men that they belong to "some low form of life." They are broadly distinguished from all other insects by the covering or scale with which they protect their bodies. In order, therefore, for a non-scientific person to understand this special feature, let us compare a scale insect to the common limpet shell on our seashore rocks. Thus we lift up the limpet from the rock and readily

separate the hard shell from the tender "fish." So it is with a certain class of scale insects: we lift up the scale or covering and separate the scale from the underlying insect. This characteristic, however, only represents a certain section, and so scale insects are divided into several divisions, according as to how they protect or modify their bodies. As a first group the term Diaspinae is given to those protecting their bodies partly by secreted scales and partly with moulted skins. These scales and cast-off skins are always lightly welded together, either as an elongated scale or in small concentric circles. A second group transforms the naked body into a scale known as Lecanium. A third group is clothed with a mealy-like secretion known as "mealy bugs," or Dactylopinæ; and a fourth group has a special development of wax plates known as Orthezia. The latter group, however, is not very commonly met with.

As regards the first group, it may be noted that we often meet with a very typical example on Ash, Alder, and Willow amongst our forest trees, and with special variations of scale according to genus and species amongst our fruit trees and greenhouse plants. The species on Ash and Willow is known by the name of *Chionaspis salicis*, and an account of its interesting life-history may now be briefly given. Imagining we are in the winter season, let us begin by taking it for examination at that season and stage. The scales are generally found on trees from six to eighteen years of age, more especially where the trees are not in a very healthy condition. With the aid of a lens the scales can be isolated better than by the naked eye, and by lifting one up and turning it over we find a number of reddish-coloured eggs in the tiny hollow of the scale. They remain in this condition until the beginning of May. At that period small, active, reddish-coloured larvae hatch out. These run about very actively for a space of three days or so, and then they settle down to their business, which is to suck the juices from the bark. At this period the stem of the infested tree has quite a red colour, due, of course, to the millions of larvae on it. At this stage these larvae measure approximately about 1-100th of an inch in length. They possess six legs, comparatively long antennae of five or six joints, two eyes, and two very long transparent hairs at the posterior end of the body. After they have settled down to their feeding operations they assume a quiescent state. As soon as the larvae assume this habit they enlarge considerably, and the legs and the antennae disappear as it were beneath the body—the scaly body embracing the appendages within itself. After the larvae has grown for a short time it casts its skin, and it is after the first larval moult that the sexes are determined. The female scale develops into a pear-shaped structure, and the male scale assumes a linear form, being as it were just a small white prolongation of the larval moult; and much smaller in size than the female scale.

Now let us follow the development a little more fully, and first with regard to the female. The larva just referred to feeds for some time and then moults by simply pushing off the old scale or skin and moving backwards a little, but slightly adhering to the cast-off skin. Then, after another short period of two or three weeks, she again moults—the second larval moult being attached to the first one. Up to this stage the creature protects herself by means of cast-off skins, but she now commences further to protect herself by means of a covering or "scale," which is spun by minute organs in the body known as "spinnerets." After the second larval moult the metamorphosis of the female insect is complete. This development has been accomplished from the beginning of May to the first week in July. The female insect underneath the scale is simply an inert slug-like creature made up of body and mouth. All traces of eyes, antennae, and legs have disappeared.

The mouth, or rostrum, as it is sometimes

termed, serves the double function of feeding organ and anchor, but in the latter capacity it is further assisted by the long hairs, or "setae," as they are termed. And sometimes when the females are loosened from the host plants by birds they may be seen, by the aid of a lens, dangling in the air and attached by the setae alone.

From the beginning of July to about the first of September slight modifications in form take place in the female under the scale, as during this period she has been preparing for egg deposition. Prior to the deposition of eggs, which takes place in September, the body entirely fills the ovisac or overlying scale, but as the eggs are deposited the body gradually shrivels, until it ultimately occupies but a very small portion at the upper end of the scale. The female dies shortly after the eggs are deposited, and during the winter months the dead female and the eggs may be found under each scale. The dead female is a very interesting object to the microscopist as a winter evening study. In fact, it may be said that all dead females of this particular group are good objects for the microscopist, more especially as the respective species are determined by the number of spinnerets, wax plates, etc., which are always found in the anal segment. Hence, scales on fruit trees, on imported fruits, or in greenhouses may be looked for. The manipulation, however, is rather tedious, inasmuch as the object must be boiled in caustic potash, passed through the various grades of alcohol, stained in aniline dye, cleaned in oil of cloves, and finally mounted in balsam.

The male scale differs from the female by having only one larval moult, and by being lighter in colour, felted, more linear, and carinated. When there is a preponderance of male scales on the bark of the infested stem, say about mid-summer, a snowy-white appearance is represented. The perfect male contrasts with the female, inasmuch as it has two wings (though wingless specimens are often found), six legs, two antennae, and two eyes, but no mouth or feeding organ. The male generally appears about the first week in July, and only lives from three to seven days, but during that short space of time he has obtained the sole object of his existence, viz., the perpetuation of his species.

Such is briefly the life-history of the scale found on Ash, Willow, Alder, etc., and known as *Chionaspis*, and the special feature of the scale is that both males and females have a linear form of scale. But there are other genera belonging to the same sub-family which may be broadly distinguished by the form of the scales. Thus in one genus we get circular female scales and linear male, and in another genus we get circular female scales and circular male.

As regards other scales of this Diaspid sub-family mention may be made of the "mussel-scale," which bears a very appropriate name, inasmuch as it resembles, when magnified, the common mussel of the seashore. This scale differs from that of the Ash-bark scale in being more elongated, less circular, and of a brown colour. It is about one-eighth of an inch in length. It is built up in the same manner as the Ash-bark scale, but the first larval moult is yellow. It is found on a great variety of food plants, but as regards economic importance it is chiefly injurious to Apples, Pears, and Plums. This scale has a very wide geographical range, and is found practically all over the world. There are many interesting points in connection with it, as, for example, the very rare occurrence of the male and the immunity from attack of some varieties of fruit trees, as contrasted with the terrible infestation of others.

Many of the species of the Diaspid class of scales are found under glass, and are often the dreaded pests of the horticulturist. As regards remedies, it may be noted that a correct knowledge of the life-histories of the insects is of inestimable value. For example, it has been noted that in the Ash-bark scale dead females and eggs are found

throughout the winter months. Hence it is obvious that the application of an insecticide would be of little value in this state. But as the larvae hatch out in May this would be the time to apply an emulsion or other insecticide, because the creatures are then in the most unprotected state, and any insecticide would then have the greatest effect. This is important in all scales—apply as far as possible all insecticides in the larval or least protected stages.

As with many other insect pests, the health of the host is an important factor, inasmuch as sickly plants are often liable to suffer. Then, young trees at the outside of a plantation, or in open spaces, often suffer more than those in the interior of the wood. In the youngest stages the Ash tree cannot stand exposure, and should be planted after other more hardy species have been planted in advance. "Natural" plants should be encouraged to grow from seed lying in the ground, as those often suffer less than the carefully cultivated examples. *A. T. Gillanders.*

FOREIGN CORRESPONDENCE.

THE BEST CLIMATE FOR VEGETATION.

On the subject of my former note (see *Gard. Chron.*, p. 34, July 17, 1915) I have received a large number of communications. Having summarised them, I come to the following conclusion:—The best climate for vegetation is *not* one that is remarkable for equal temperature, but one that has summer and winter seasons. The extremes, however, should not be excessive: the summer extreme should be about 90°, and the winter 34°. The rains must be equally distributed over the whole year; no dry and no wet season. A rainfall of 40 inches, or about 3 inches a month, is sufficient. This quantity must be equally distributed over every month of the year. In such a climate doubtless all plants would do well. Is there such a climate in the world? There seems to be one place on the globe where perhaps nine-tenths of the whole vegetation of the globe would succeed. This ideal climate is found at Santa Barbara, in Southern California, under 34° 26' N.L., and 119° 45' W.L., on that portion of the Pacific coast where this, changing its normal direction, takes a course from west to east, lasting about 70 miles. This is the only section facing due south, and receiving, moreover, further protection from northern influences by the Santa Inez Mountains, 3,000 to 4,000 feet high, running parallel to the coast a few miles inland. Some thirty miles off in the ocean another range runs in about the same direction, of which the emerged portions form the islands of San Miguel, Santa Rosa, and Santa Cruz, which act as a regular barrier against heavy winds and heavy seas from the south, so that the channel between the islands and the mainland well deserves the name of Pacific. The following are the mean temperatures for the months:—

Jan. 53	Apr. 57 9	July 65 5	Oct. 62 6
Feb. 54 6	May 59 7	Aug. 66 9	Nov. 59 1
Mar. 55 3	June 62 6	Sept. 64 1	Dec. 55 6
Annual 59 9.			

The highest temperature observed was 107°, and the lowest 20° 5'; precipitation, 17.19 inches on 32 days. The whole year has 241 cloudless days. In 15 years frost was observed 200 times. The lowest minimum temperature was 87° in December, and the greatest range of temperature in one day 49°. Thunderstorms and high winds are almost unknown, and snow has never been observed; the average velocity per hour of the wind is only four miles. According to Dr. Franceschi, up to the present not a single species of plant from any country has refused to do well! When comparing this with the climate here (annual mean about 66°), where many European plants refuse to grow, the climate of Santa Barbara must approach the ideal.

"COLD" PLANTS ON THE EQUATOR.

In a list of the flora of Penang I find the following European plants quoted as growing wild or as naturalised:—*Cardamine hirsuta*, *Setaria glauca*, *Arundo Donax*, *Solanum nigrum*, *Plantago major*, *Pteris Aquilina*, and *Oxalis corniculata*. In a list of plants cultivated in the Singapore gardens I find many Japanese plants. It would be interesting if botanists in the tropics would relate their experience of European and other "cold" plants that do well in their climate. *M. Buysman, Lawang, East Java.*

HORTICULTURE IN BELGIUM AND FRANCE.

In the course of an interesting summary of the effect of the war on horticulture (see *Le Jardin*, March 5, 1916) it is stated that the Minister of Agriculture in Germany is prepared to give away to growers 20 million young fruit trees. The exploitation of Belgians by Germany appears to continue on the truly Teutonic line of conveying horticultural products at the rate of 20 wagon-loads a day to Germany.

Horticultural trade in France is improving, and in spite of shortage of labour market gardeners are doing well.

An interesting photograph of the damage of "military" establishments by Zeppelin bombs shows the wreckage by these means of the glass-houses belonging to a nurseryman. Germans will be rejoiced to know that two glasshouses were completely destroyed and that the "military stores" within—Peaches in full blossom—were severely damaged.

LETTER FROM THE FRONT.

AFTER spending several months in the uninteresting stretches of sand which lie to the east of Cairo, it was pleasant to see the green hills and valleys of Southern France, and once again to see gardens of a climate similar to that left behind in my own land, namely, Victoria. The time being the first week of April, the slopes on every side were clothed in the snowy blossoms borne by old, naturally-grown (unpruned) Cherry trees; Pears and Apples were also flowering in some sheltered situations. Around — the flowers most frequently seen were winter-flowering Stocks, Pansies, *Fritillaria Imperialis*, *Iris florentina*, Hyacinths, Muscari, Sweet Alyssum, *Iberis sempervirens*, Primroses and Polyanthus. The railway embankments were clothed with *Centranthus* and some small species of *Viola*. Around —, the most conspicuous objects in the gardens were the red growths of herbaceous Paeonies, and familiar items, such as *Dicentra spectabilis*, Tulips, Scillas, and Wallflowers, whilst the woods and meadows thereabouts were starred with Cowslips and Daisies. Further north the main feature of interest to a flower lover were the Wallflowers, everywhere abundant on the sides and top of stone walls. It would not be possible to grow them thus in Victoria without considerable assistance from the water supply during early autumn. The English troops have beds of Empress Daffodil, and various vegetables in different stages of growth. *G. E.*

VEGETABLE GARDEN.

CELERIAC.

CELERIAC or Turnip-rooted Celery is worthy of extended cultivation. The root-like stems form a useful and wholesome vegetable in winter. The seed should be sown and the plants grown in much the same manner as Celery. The plants should be grown in rich soil on the flat, and kept liberally supplied with moisture. If the stems are lifted and stored in ashes in a shed, when growth is completed, and before severe frosts occur, they will keep in good condition all through the winter. *Edwin Beckett.*

The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

COLEUS.—To obtain large plants of *Coleus* of good colour grow them in a warm, moist house, and re-pot them before they become pot-bound. The compost should consist of loam, leaf-mould, manure from a spent Mushroom-bed, and coarse sand. For the final potting use pots 9 or 10 inches in diameter. During hot, sunny weather sprinkle moisture freely between the plants, but keep the foliage dry.

ROSE FORTUNE'S YELLOW.—After the plants have finished flowering cut the old-flowering shoots to the base. Top-dress the borders with well-decayed manure, and when the plants are in active growth feed the roots liberally with stimulants. The young growths require thinning and regulating several times during the growing season.

GREENHOUSE CLIMBERS.—The plants are growing freely and require constant attention in tying and regulating the young shoots, which if neglected will become entangled and difficult to train. The stronger-growing kinds must be well thinned or they may smother their less robust neighbours. Feed liberally old, established plants growing in shallow, restricted borders. Fumigate the house occasionally to keep insect pests in check, using a nicotine compound.

LILIUM.—Plants of *Lilium* species which have filled their pots with roots need plenty of stimulants, and, if there is room in the pots, apply a top-dressing of rich material. Unless the plants are required to flower early do not force them hard. Plants of *Lilium speciosum rubrum* and *L. s. album* intended for autumn flowering should be kept growing in a cold frame. By the end of the present month they may be plunged in a bed of ashes in a position shaded from full sunshine. *Liliums* are very subject to attacks of green-fly, and should be sprayed occasionally with an insecticide or the house fumigated with a nicotine compound.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

DENDROBIUM.—*D. nobile* and its varieties, *D. Wardianum*, *D. crassinode*, *D. Ainsworthii*, *D. Artemis*, *D. Wiganiae*, *D. Thwaitesiae*, *D. Cybele*, *D. rubens*, *D. Juno* and *D. Lady Colman* may be grown in ordinary flower pots. *D. prinnalinum*, *D. crepidatum* and others having a more or less pendulous growth, should be planted in rather shallow pans furnished with wire handles for suspending the plants from the roof-rafters. Almost immediately the plants have finished flowering they may be re-potted, and the collection should be examined once a week to see which are ready for potting. Some may not require this attention for a season. *Dendrobiums* need, as a rule, only a small quantity of soil, therefore the receptacle, whether pot or pan, should be filled at least half its depth with drainage material. As a rooting medium, use a mixture of *Osmunda*-fibre, divided moderately finely, and a sprinkling of chopped *Sphagnum*-moss. Remove the fine particles or dust from the fibre by means of a small-meshed sieve. Some of the smaller specimens may be shifted into larger pots without much disturbance of the roots, merely breaking the old pot and removing decayed soil near the surface. Others, with a large number of pseudobulbs, need more attention, and will, in all probability, need smaller pots. Reduce the number of back pseudobulbs to two or three behind each lead or growing point. The old pseudobulbs may be utilised by cutting them into pieces, and placing them around the edge of a pot filled with *Sphagnum*-moss and sand. In potting make the compost fairly firm, and tie the pseudobulbs to thin green

stakes. *Dendrobium nobile* and others of its section may be grown in ainery throughout the year. Be sparing with water at the roots of new plants, but keep the atmosphere moist. Slight shading is necessary throughout the middle of the day whenever the sun shines brightly, and especially when the shoots are young. As the new pseudo-bulbs develop and approach maturity, sunlight is beneficial. The plants may be sprayed lightly overhead in fine weather, and a little fresh air admitted on mild days.

ANGULOA.—*Anguloa Clowesii*, A. Cliftoni, and a few other species are sending up their flower scapes; when the spikes are over and removed, the plants may be repotted. Plants that are not expected to flower may be repotted at once, if necessary. The compost should include rich, fibrous loam, which should be pulled to pieces, and only the fibrous portions used. Ordinary flower-pots or fairly deep pans provide the best receptacles. One-third of the pot should be filled with drainage material, and over this should be placed a thin layer of loam. Do not bury the young growths too deeply: let their bases rest just on the compost. For the present the roots need only sufficient water to keep the pseudo-bulbs plump and rigid. During their growing season the plants may be placed in a shady position in the intermediate division. Sponge the foliage, and especially the undersides of the leaves, occasionally, to hold red-spider in check.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME,
Warter Priory, Yorkshire.

SUCCESSIONAL PEACH HOUSES.—Give timely attention to trained Peach trees in such details as disbudding, pinching, and tying the new growths, retaining no more shoots than are necessary for cropping next season. Protect the stems of the trees by tying young shoots over them, as the sun has an injurious effect on the tree if allowed to shine with full force on the stem all the summer. Keep the temperature at about 55° until the fruits have stoned, and syringe the trees with clear soot water twice a week. Trees in later houses will derive benefit from a little fire-heat until the weather is more settled, as the cold air has an injurious effect upon the tender foliage. When all the trees have set their fruits, give them two syringings daily, and watch closely for green fly, fumigating directly the pest is detected. Before fumigating see that the foliage is perfectly dry, otherwise the leaves will be liable to become scorched. Examine the borders frequently to see that the soil is sufficiently moist.

CUCUMBERS.—After this date the amount of fire-heat may be reduced gradually, and the houses closed extra early with sun-heat and plenty of moisture. Guard against an excess of moisture on dull days, or mildew will soon spread. Keep a brisk bottom heat for the roots, and water them copiously with water warmed to 80° or 90°. Stimulate the plants with top-dressings and liquid manure; crop lightly and ventilate carefully to prevent cold draughts. Plants in frames should be examined two or three times a week, pinching the laterals at the first joint beyond the fruit, and keeping the beds evenly covered with foliage. Soft water at a temperature of 80° to 90° is best for general purposes; it may be varied with soot water once or twice a week. The roots will not need feeding often in the early stages; when necessary use liquid manure, and syringe the foliage with clean water afterwards.

PINEAPPLES.—Pines have made only slow progress recently, and this may cause some inconvenience, but do not attempt to force them unduly now. With good management sunny May is the best month for the fruits to swell, as it is not necessary then to use an excessive amount of fire-heat. The house may be shut up very early in the afternoon, and a high tropical temperature maintained, with an abundance of atmospheric moisture from now onwards until the fruits begin to change colour. Lightly spray the plants with clear water on fine afternoons. The temperature after closing time may be permitted

to reach 95°. The spraying must be very light, for it must not take the place of damping the surfaces of the bed and charging the axils of the lower leaves occasionally with warm diluted guano and soot water. These stimulants may be given to the roots whenever they need moisture, remembering that it is best at all times to err on the side of moderation in watering. Piras, as the plants obtain much moisture from the beds and the atmosphere. A little air may be admitted at night, closing the ventilators at 6 o'clock on the following morning. On promising mornings the day ventilation may commence when the temperature reaches 78°, gradually increasing the amount as it rises to 85° and 90°.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH,
Wroxton Abbey, Banbury, Oxfordshire.

CARROTS.—Sow seeds for the main crop of Carrots in drills made 14 inches apart, placing a few seeds in a group at every 10 inches, subsequently removing all but the best seedling in each group. For deep, sandy loams and other light soils New Red Intermediate and Long Surrey are suitable varieties. For heavy soils choose a stump-rooted, intermediate variety, such as Favourite. If long roots suitable for exhibition are required, bore tapering holes with a crowbar 30 inches deep, 3 inches wide at the top, and at least 12 inches apart in each direction. Fill them with light, sandy soil, and sow several seeds one inch deep in the centre of each station. Remove all but one seedling, and do not choose the strongest one, which generally develops a badly coloured and unsymmetrical root.

CELERY.—This crop succeeds best if the whole of the ground is trenched and the plants transferred into depressions deep enough only to hold sufficient water. Where it has been impossible to trench the ground owing to shortage of labour, make trenches 12 inches deep, 15 inches wide, and at least 4 feet apart from the centre of each trench. At the bottom of the trenches place a thick layer of manure, and cover this with several inches of soil. Place two rows of Celery 10 inches apart in each trench, allowing 15 inches between the plants in the rows. Transfer successional batches of Celery to the trenches as the plants become ready for transference. Celery must never receive a check to growth. The ridges of soil on either side of the trench may be planted with such crops as Lettuces, Dwarf Beans, and early Cauliflowers.

BRASSICAS.—Make a final sowing of late Broccoli, Kales, and late Savoy.

RUNNER BEANS may be sown in the open in well-trenched, richly-manured ground, which is better than making narrow trenches only. It is advisable to place the stakes in position previous to sowing seeds or transplanting seedlings to prevent injury to the roots. Runner Beans are very liable to be damaged by strong winds owing to the large amount of surface they present, therefore fasten the stakes to a strand of stout wire capable of withstanding considerable strain. The wire should be stretched between stout poles with intermediate poles if necessary. Sow the seeds in single rows, and thin the seedlings to 12 inches apart in the rows.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE,
Ellisfield Manor, Basingstoke, Hampshire.

SWEET WILLIAMS.—Seeds of *Dianthus barbatus* (Sweet William) may be sown as advised above for Wallflowers. Good varieties are Pink Beauty, Sutton's Scarlet, slightly dwarfier in habit, and Giant White, the tallest of the three. A large bed filled with Pink Beauty and bordered by a double edging of *Nepeta Mussinii* is very beautiful.

WALLFLOWER AND ERYSIMUM.—Sow Wallflower seeds in rows made 1 foot apart, preferably in ground which is not very rich. Sow the seeds thinly, in order that the seedlings may make fairly large plants before they are transplanted. Useful varieties include Blood Red, Harbinger, Cloth of Gold and Fire King. The last is of a brilliant colour, but unfortunately is very prone to throw rogues. Little Brown Bedder is a

variety well worth growing, and so also is Eastern Queen, which gives delightful shades of colour. Also sow *Erysimum Golden Gem*, a plant closely allied to the Wallflower, at the same time as the latter. The *Erysimum* gives a rich mass of yellow, somewhat resembling *Alyssum saxatile* at a distance, but superior to that plant.

CANTERBURY BELLS.—The Canterbury Bell is usually associated with Sweet William, because the plants flower at about the same time. Sow seeds of Canterbury Bells very thinly; they are small, and germinate very readily. In this flower, also, self-colours are to be preferred. Most seedsmen catalogue distinct strains of pink, blue, and white.

MYOSOTIS.—I do not find it necessary to sow seeds of *Myosotis*, but rely entirely on self-sown seedlings. Start with a good variety, and leave the plants in the bed or border until the end of May to seed themselves; numerous seedlings will spring up during the summer. To make doubly sure of having sufficient seedlings, shake the old plants over the beds as they are being removed. In digging the beds for the summer plants many of the *Myosotis* seeds will be buried deeply, but there will be quite sufficient near the surface that will germinate. In July it will be possible to procure little tufts of these seedlings and plant them in vacant ground in rows made 1 foot apart, setting the plants 6 to 9 inches apart in the rows.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE,
Eastwell Park, Kent.

EARLY STRAWBERRY BEDS.—The earliest plants growing on sheltered borders promise well, and are throwing up an abundance of stout flower-spikes and healthy foliage. Strawberries grown for this purpose are best treated as annuals, and should be planted 15 inches apart each way. The plants should be discarded immediately the crop is gathered. Such plants produce extra fine berries a week or two earlier than those planted in exposed positions. King George and Royal Sovereign are suitable varieties for this purpose, the former being usually the first to ripen by a few days, but both are first-class sorts for the production of early fruits. One of the advantages of this system of close planting and treating as annuals is the ease with which the plants may be protected. The blooms opening early are in greater danger of injury from spring frosts, but the complete protection of the bed is a simple matter. Either empty movable frames may be placed over the plants or a few spare lights stood on empty flower pots over the bed. The latter plan proves the best with us, probably because there is a good circulation of air about the plants. If glass lights cannot be spared for the purpose, make a light framework to carry a few mats or other protective material, which should be readily available when frost is anticipated. Before placing the lights in position hoe the beds, top dress them lightly with a fruit manure, and well water the roots. Dust a little soot around the crowns of the plants to keep slugs away, and place clean straw or stable litter along the rows. There need be no hesitation in using stable litter, as the manure is washed out by rains, and the litter becomes purified and bleached by exposure to the sun before the fruit comes in contact with it.

PROTECTION FROM BIRDS.—Get the nets used for protecting fruit from birds into position in good time, as birds often attack fruits even before the latter start colouring. In some gardens a permanent wire netting enclosure is arranged for the fruit quarters, and though such enclosures are sometimes objected to as unsightly, they are undoubtedly very effective. Where a temporary protection is preferred, fish netting is usually employed. Wire netting should be placed around the outside of the bed, and the fish-net attached to this, and supported by posts and wire, or long, slender green poles. Nets supported off the ground invariably last longer, nor is there any danger of tearing them in removal. If laid flat on the beds, birds will sit on the nets and eat the fruit with ease.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would oblige delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Letters for Publication.—as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, MAY 8—

United Hort. Ben. and Prov. Soc. Com. meet.

WEDNESDAY, MAY 10—

Sheffield Chrys. Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 49.5°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, May 4 (10 a.m.); Bar. 29.2"; temp. 60.0°. Weather—Showery.

SALES FOR THE ENSUING WEEK.

TUESDAY, WEDNESDAY AND THURSDAY—

The collection of orchids formed by the late Sir Trevor Lawrence, Bart., at Protheroe and Morris's Rooms, 67 and 68, Cheapside, E.C., at 1.

The Germination of Seeds.

Much work has been done and much has been written on the subject of the germination of seeds. Indeed, so long as gardening exists the capriciousness of seed germination will continue to prove a source of vexation to the gardener and of pleasure to the person with a taste for experimentation. The gardener of the old school will doubtless continue to carry old Melon seed in his waistcoat pocket in the sure and certain hope that the moderate amount of warmth which they receive will provoke the seeds in due course to sprout and grow. The newer school will seek in warm water and in various chemicals, such as hydrogen peroxide, iodine, and the like, effective agents for overcoming refractoriness of germination. Recent investigations carried out by Demoussy* introduce a new factor into this old problem. Demoussy finds that seeds of Cress seven years old failed to germinate when kept moistened with distilled water, but not submerged and maintained in a favourable temperature (27° C. = 80° F.). But if the old Cress seed is treated with a dilute solution of hydrogen peroxide (0.6 volume) 30 per cent. of the seed ger-

minated in ten days. With a weaker solution of hydrogen peroxide (0.25 volume) the germination was even higher, and reached 40 per cent.

The use of hydrogen peroxide for the purpose of awakening seeds into growth is, of course, well known; but so far as we are aware the discovery of the superior potency of the weaker over the stronger solution is new. Yet more interesting is the observation of Demoussy that the old seed behaved very differently when kept in water at a lower temperature. Thus after steeping in water at 14° C. (55° F.) 25 per cent. of seven-year-old Cress seed germinated in 15 days, and 45 per cent. in hydrogen peroxide of 0.25 vols. In order to follow the interpretation which the author gives of these results it must be stated that hydrogen peroxide is a substance which parts readily with some of its oxygen, and the oxygen which it gives up is made use of by the seed for purposes of germination and growth.

Demoussy holds that a seed contains not only the miniature plant, but also a mass of micro-organisms, which compete with the embryo for oxygen. At the lower temperature the micro-organisms are less lively, their competition for oxygen is less effective, and such seeds as retain a certain measure of vitality are able to seize hold of the oxygen dissolved in water or liberated from the hydrogen peroxide, and hence to start into growth. At the higher temperature, on the contrary, the micro-organisms become active and avid of oxygen, and so the poor seed has none. Two questions of practical importance arise out of these observations. In the first place, is it possible to keep down the growth and increase of the micro-organisms which live in the seed coats? This might be done perhaps if seeds were transferred to cold storage immediately after harvesting.

A second and more practical question is this: Is any method of partial sterilisation possible for seeds? For example, would it be possible by subjecting moistened seeds to a fairly high temperature to kill the micro-organisms without destroying the embryos? There is evidently room here for a promising piece of research, for, as is well known, some seeds lose their powers of germination very rapidly indeed. Such a research could not fail to throw light on the nature of the micro-flora of seeds, a subject of great importance, and one on which next to nothing is known.

THE SURVEYORS' INSTITUTION.—The next ordinary general meeting of the Surveyors' Institution will be held in the Lecture Hall of the Institution on Monday, the 8th inst., at 5 p.m., when a paper will be read by Mr. F. N. KEEN (Barrister-at-Law), on "A Scheme for the Development of Agricultural Land."

SWANLEY HORTICULTURAL COLLEGE. The annual report of the Horticultural College, Swanley, Kent, states that the college has been full to overflowing all through the year, owing to the greatly increased need for women gardeners, farm-workers, and dairy-workers. Short courses were arranged to meet this need, and have been very successful. The number of appointments

made from the college was 525 in 1915, as against only 130 in the previous year.

SCOTTISH VETERANS' GARDEN CITY SCHEMES.—The sum of about £10,000 has been subscribed to the scheme known as the Scottish Veterans' Garden Cities in Scotland. Perthshire alone has subscribed upwards of £3,000. Committees are being formed for the different counties in Scotland, and the president is the Earl of Wemyss. A start will be made at Longniddry, and the provision of the first section there will cost about £12,000.

GIFT OF BOOKS TO THE LINDLEY LIBRARY.—The Lindley Library of the Royal Horticultural Society has been presented with a magnificent collection of books from the library of the late president of the society, Sir TREVOR LAWRENCE, Bart. The volumes are beautifully bound in half calf, are all valuable, and in many cases rare. They bear a book plate, inscribed, "Presented to the Lindley Library of the Royal Horticultural Society, in memory of Sir J. J. TREVOR LAWRENCE, Bart., K.C.V.O., V.M.H., President of the Society from 1885 to 1913, by his children, 1916." Among the books may specially be mentioned:—H. C. Andrews, *Coloured Engravings of Heaths*, 4 vols. H. W. Bates, *The Naturalist on the River Amazon*, 2 vols. J. Conder, *The Flowers of Japan*. J. Curtis, *British Entomology*, 8 vols. Mrs. T. J. Hussey, *Illustrations of British Mycology*, 2 vols. T. Moore, *Illustrations of Orchidaceous Plants*. R. Warner, *Select Orchidaceous Plants*. Lindenia, *Iconographie des Orchidées*, 17 vols. L'Orchidophile, 10 vols. *Journal des Orchidées*, 7 vols. *La Belgique Horticole*, 35 vols. *Revue de l'Horticulture Belge*, 25 vols., and *Journal of Botany*, 45 vols.

SCHOOL GARDENS.—In a memorandum for Teachers in Rural and Suburban Schools issued by the Board of Education on the subject of the means to increase the supplies of home-grown food, it is stated that there are 3,129 school gardens in England, and that 56,037 children or elementary school age receive instruction in practical gardening. It would be interesting to know what proportion of schools and scholars these figures represent, but on this head the memorandum is silent. If, as it would seem, that proportion is an extremely low one, the Board of Education ought to take steps forthwith to remedy a state of affairs for which it is in the main responsible.

A GUIDE TO KEW GARDENS.—Under the authority of the Board of Agriculture, and upon the recommendation of the director of the Royal Gardens, Kew, visitors interested in horticulture will be conducted over Kew Gardens on Mondays, Wednesdays, and Thursdays by Mr. JONAS WEATHERS. Parties will meet at the principal entrance on Kew Green at 3 p.m., and each person will be charged a fee of 2s. 6d.

BRITISH LEGISLATION "MADE IN GERMANY."—The German newspapers publish an announcement which the Official Reichsanzeiger states has been circulated by the Central News. According to this announcement the British Government intends to introduce a Bill compelling all owners of private gardens in the United Kingdom to plant them with vegetables to the extent of at least 75 per cent. The conclusion drawn is that Great Britain is experiencing great difficulty in obtaining supplies, owing to the activity of the German U-boats.

EXPORTS OF DUTCH FRUIT AND VEGETABLES TO GERMANY.—The Dutch Commission for Foreign Trade publishes the following figures of the value of exports from Holland to Germany between May 1 and December 31, 1915:—Cabbages, 1,744,116 guilders; Cauliflowers, 1,450,610 guilders; Onions, 5,401,900 guilders; Cucumbers, 4,924,770 guilders; Tomatoes, 384,996 guilders; Carrots, 572,314 guilders; other vegetables, 5,926,126 guilders—total, 20,584,832 guilders. The value of the fruit ex-

* E. Demoussy *Comptes rend.* 1916, 162, 135. Abstracted in *Pharm. Journal*, April 23, 1916.

ported reaches a sum of 24,474,800 guilders. The total value of exported fruit and vegetables is consequently 44,859,632 guilders, or nearly four million pounds sterling.

POTASH FROM GERMANY.—A note in the *Seed World* (Chicago, April 5, 1916) puts the export of potash salts from Germany at 82,000 tons, as against 570,000 tons in the previous year. Prices have advanced in the U.S.A. from 39 to 500 dollars a ton.

DESICCATED CABBAGE.—The enterprise of cultivators in Denmark appears to be unending. In recent years it has taken the form of drying vegetables—particularly Cabbage—for export. A note in the *Journal of the Society of Arts* (April 21 1916) states that in the winter months large piles of dried Cabbage may be seen on the quays of Copenhagen awaiting shipment. No fewer than 10,000 tons of this vegetable are exported yearly, chiefly to Russia. The advantages of drying are reduction of weight—the dry Cabbage weighing a little more than half the fresh article—and hence a saving of cost of carriage and duties, and also prevention of damage from frost. The export trade of Denmark includes also dried Potatoes, Carrots, Celery, and other vegetables.

ONION SEED FROM THE CANARIES.—According to the report of the U.S.A. Consul at Tenerife (see *Seed World*, April 5, 1916), about 40,000 lbs. of Onion seed were exported from the Canaries to the United States in 1915.

WAR ITEM.—Under the title "A Patriot," the *National Nurseryman* publishes the following letter, which gives a splendid example of Canadian patriotism:—"Kindly take my name off your list of subscribers. I am expecting an early call to the front. My four sons have already gone. Hope to again take your paper in happier times."

VEGETABLE PRODUCTS COMMITTEE.—This committee, which was formed in the autumn of 1914, has already accomplished much good work in connection with the supply of fresh fruit and vegetables to the fleet. The committee, with the recognition and support of the Admiralty and War Office, collects and delivers fruit, vegetables, jam and preserves, free of cost, to warships, hospitals, and other institutions, thus fulfilling an important function which has greatly conduced to the health of the Navy in general. The crews of the warships get practically no fresh fruit or vegetables, except what they themselves buy out of their own pockets; and even if they could afford it, it would often be impossible for them to obtain such produce, were it not for the help of the committee. Between October, 1914, and December, 1915, 9,000,000 lbs. weight of fruit and vegetables were despatched to warships in the North Sea. The committee appeals for further help in carrying on the good work. Apples, Oranges, Pears, Nuts, Bananas (if not too ripe), all ordinary vegetables, and especially green leaf vegetables, are required, and will be gratefully received. All information as to exactly what is required, and how the various gifts should be packed and despatched, can be obtained from the head office of the committee, Alderman's House, Alderman's Walk, London, E.C.

PRUSSIAN TEA-KULTUR.—A correspondent of the *Morning Post* contributes an interesting article to that journal on the subject of the expedients resorted to by the Prussian Government to find substitutes for "Chinese, Japanese and other Asiatic tea," the price of which is now prohibitive to all but the wealthy. A Prussian Government communication draws attention to the advisability of Germans using German tea, which is made from the dried young leaves of the Strawberry, Blackberry, Whortleberry, Black Currant, Raspberry, Cherry, Birch, Elm, and other trees. The official communication states—perhaps unnecessarily—that the tea brewed from this blend has a far more varied taste than that of "Asiatic" tea.

PUBLICATIONS RECEIVED.—*The Principles of Plant Culture.* By the late E. S. Goff, revised by J. G. Moore and L. R. Jones. (New York: the Macmillan Co.) Price 5s. 6d. net.—*The Australian Flora in Applied Art.* By R. T. Baker. (Sydney: Department of Technical Instruction.)—*The Australian Grey Mangrove.* By R. T. Baker. (Reprinted from the *Journal of the Royal Society of N.S. Wales.*)—*Field and Laboratory Studies of Soils.* By A. G. McCall. (New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd.) Price 2s. 6d. net.—*The Carnation Year Book.* (Burnley: Hortus printing Co., Ltd.) Price 1s. 6d.

perfectly hardy. The tiny, green cushions formed by the plant are at present a mass of rose-pink blossoms. *George M. Taylor, Mullothian.*

BRUSSELS SPROUTS (see pp. 175, 188, and 212).—Mr. Beckett (p. 188) recommends two or three sowings of Brussels Sprouts in the same season. I did not state that two or three sowings were inadvisable, but I do not myself find more than one necessary. My plants yield Sprouts from October until April, and sometimes attain a height of 5 feet, bearing Sprouts from bottom to top. Indeed, Mr. Beckett himself says, in his book on *Vegetables for Home and Exhibition*, p. 59, "The best Brussels Sprouts are only obtained by allowing the plants a long season of growth," which bears out my point that late sowing is a frequent cause of failure. Mr. Markham (p. 212) states that he does not consider it necessary "in favourable localities" to raise plants under glass, but he gives no indication of what he understands by a "favourable locality." *Ayrshire* seems to have misunderstood my reference to Brussels Sprouts following the Cauliflower crop. I mean, of course, the crop of the previous year, not of the same season. With reference to the "unsightliness" of Brussels Sprouts supported by stakes, I venture to think that the success of a crop so heavy as to need such support would outweigh so small a disadvantage. *Practical.*

THE INTRODUCTION OF THE DAHLIA.—Everybody who has written upon the history of the Dahlia tells us that it was first introduced into this country in 1789 by the Marchioness of Bute, and having been much interested in tracing the history of that flower it would be of great service if any of your readers could help me to verify the fact. References to modern authors, all of whom more or less copy from one another, are of no use. What I want is contemporary corroborative evidence. Plate 762, *Botanical Magazine*, gives Dahlia coccinea as grown by Fraser of Chelsea in 1803. Plates 1885A and 1885B in the same work, 1817, give the crimson-flowered Dahlia and the double purple-flowered, and in the descriptive letterpress it says "Native of Mexico. Introduced in 1789 by the Marchioness of Bute." Sabine in the *Horticultural Transactions*, Vol. III., p. 224, in a paper read before the society in 1818, guardedly says: "The original introduction of the first species was (on the authority of the *Hortus Kewensis*) from Spain in 1789 by the Marchioness of Bute, but it is probable that the plant so introduced was soon after lost, as I do not find any further notice of it." It would thus appear that the sole authority is the *Hortus Kewensis*. When we turn up that work the information given is as bare as bare can be. On p. 87 of Vol. V., second edition, 1813, under the heading "Dahlia," after mentioning the then known varieties of the species superflua, it says: "Nat. of Mexico. Introd. 1789 by the Marchioness of Bute." That is all, and nobody, so far as I can discover, since that date has in any way amplified the statement. What I particularly wish to know definitely is, Does any other authority in any work between 1789 and 1813 give an independent reference with fuller particulars of the Marchioness of Bute's introduction? And if so where can it be found? *C. Harmon Payne.*

CANTELOUP MELONS.—Your correspondent, Mr. C. E. Bridger, inquires on p. 202 where the seeds of the varieties of Canteloup Melons mentioned by Dr. Durham can be purchased. All of these may be obtained from Messrs. Vilmorin-Andrieux et Cie., 4 Quai de la Mégisserie, Paris. *J. F. Rotton, Lockwood, Frith Hill, Godalming.*

THE STAR OF BETHLEHEM (ORNITHOGALUM).—In Mr. Weathers's excellent and useful *Bulb Book*, after giving the etymology of the generic name Ornithogalum—ornis a bird, and gala milk—he adds the words "application mysterious." This was explained to me long ago in the following way. In the plains of Palestine a species of Ornithogalum, or Star of Bethlehem, greatly abounds, and covers the ground with sheets of white flowers in spring. Hence the Greeks called it Bird's Milk, the Arabs less poetically by a name signifying Dove's Dung. In the Authorised Version (2 Kings, VI., 25) it is stated that during the famine caused by the siege of Samaria



FIG. 104.—PRIMULA CONICA, A NEW CHINESE SPECIES.

(See Awards by the Floral Committee, p. 248.)

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

ARMERIA CAESPITOSA (see p. 225).—I was pleased to note that this beautiful little Thrift was honoured with an Award of Merit when exhibited at the Royal Horticultural Society's meeting on April 11. I have it in full flower, and the plants are now thoroughly established in well-drained crevices between the stones of a wall-garden. It likes full sunshine. My plants are now five years old, and appear to be

"the fourth part of a cab of dove's dung was sold for five pieces of silver." It is difficult to imagine how that material, literally understood, could be of any service to the starving inhabitants, but the mystery is solved when it is explained to have been the edible roots of *Omphogalum*. When the Revised Version came out I was curious to see whether the translators, in all the effulgence of nineteenth-century learning, had made an appropriate change in the text. Not a bit; all they had done was to alter the spelling of "cab" into "kab"! *Herbert Maxwell, Monreith.*

SOCIETIES.

ROYAL HORTICULTURAL.

MAY 2.—The National Auricula Society's annual exhibition was held in conjunction with the fortnightly meeting of the R.H.S., in the Vincent Square Hall, Westminster, on Tuesday last. Besides the choice plants in the competitive classes many Auriculas were shown in collections, as well as Polyanthus and coloured Primroses of fine strains.

The Floral Committee recommended four Awards of Merit to new plants, and awarded twenty medals to collections.

The Orchid Committee recommended four Awards of Merit to novelties, and awarded three medals to groups.

The fewer exhibits before the Narcissus Committee points to the wane of the season for these flowers; only two medals were awarded to groups, but three varieties gained the Award of Merit.

The only award in the Fruit and Vegetable section was a Bronze Knightian Medal for a collection of Apples.

At the 3 o'clock meeting in the Lecture Room, Mr. A. H. LEES gave an address on "Some Aspects of Spraying Against Pests."

Floral Committee.

Present: Messrs. H. B. May (chairman), W. J. Bean, John Green, G. Reuther, J. W. Moorman, J. Heal, J. Dickson, C. Dixon, C. E. Shea, C. E. Pearson, W. P. Thomson, J. Hudson, A. G. Jackman, R. W. Wallace, C. R. Fielder, J. F. McLeod, T. Stevenson, W. Howe, H. Cowley, E. H. Jenkins, G. Paul, Sydney Morris, R. C. Notcutt, R. Hooper Pearson, J. Jennings, and Arthur Turner.

AWARDS OF MERIT.

Primula conica (see fig. 104).—A species of the *Muscarioides* section. The inflorescence is a crowded spike of lavender-purple blooms, forming a dense head. The stalks are hairy, and about 9 inches long. The blooms are about $\frac{1}{4}$ inch across at the mouth and a paler colour in the interior. The leaves are spatulate, about 6 inches long, and with short, silky hairs. Exhibited by Messrs. R. WALLACE AND CO., from specimens collected by Mr. Geo. Forrest in China.

Ribes cereum (see fig. 105).—A Californian species, forming a dwarf, diffusely branched shrub, spiny, and bearing three or five-lobed leaves a little smaller than those of the Gooseberry. The pendulous flowers are about an inch long, the recurving outer petals being crimson-maroon, the inner ones tubular and of shell pink tint, with white tips. The fruits are covered with long spines. This is a very ornamental Gooseberry, the flowers being like small Fuchsia blooms. Shown by Mr. CLARENCE ELLIOTT.

Carnation Lord Kitchener. This fine Carnation is a variety of the Perpetual-flowering type. The bloom is large and full petalled, the colour being bright pink with salmon sheen in the centre. The stems are unusually stiff, being almost like wire. Shown by Messrs. W. WELLS AND CO., LTD.

Dianthus macrolophus rumelicus. This small, tufted Pink is a native of the mountains of Thrace, of which the commonest form has carmine-red flowers; the variety *rumelicus* has clear pink petals. The species has been described as a miniature *D. glaucialis*. The three plants ex-

hibited in a small pan were flowering profusely. Shown by Messrs. R. TUCKER AND SONS.

OTHER NOVELTIES.

MESSRS. J. PIPER AND SONS showed flowering branches of *Dipelta floribunda*, a handsome shrub allied to *Diervilla*. The species was first collected around Hans-chunfoo, China, in 1874-5, and subsequently Mr. E. H. Wilson sent seeds to Messrs. J. Veitch and Sons from Wa Shan. The flowers are either axillary or in

were in small pots, about 1 foot high, and a mass of bloom. Mr. ELISHA HICKS exhibited *Rose Queen of the Belgians*, a single variety, with shrimp-pink petals having a golden base. The blooms have the shape of a full-petalled variety, and are borne on long stems. The unopened buds are very charming.

GROUPS.

The following medals were awarded for collections:—

Silver-gilt Banksian Medal to Messrs. B. R. CANTAND SONS, Colchester, for an imposing group of Roses. This handsome exhibit had at the back a row of Ramblers trained to present a flat face of blooms, which hung in dense clusters. At the foot of the Ramblers were epergnes filled with *Fortune's Yellow*, *Austrian Yellow*, *American Pillar*, *Rose du Barri*, and others of this type, the foreground having boxes of exhibition blooms of such choice varieties as *White Maman Cochet*, *Hon. Mrs. R. C. Grosvenor*, *Avoca*, *Mrs. Edward Mawley*, *Dean Hole*, *Bridesmaid*, *Mrs. Foley Hobbs*, *St. Helena*, and *Ulrich Brunner*. *Silver Flora Medals* to Messrs. ALLWOOD BROS., Wivelsfield, for Carnations of the perpetual-flowering type. They showed novelties in *White May Day*, and *The Major*. Indian chestnut colour, also the new perpetual-border varieties *Brilliant*, white, flaked with crimson; *Highland Lassie*, white, with Picotee edge of scarlet-red; and *Rosalind*, yellow ground, flaked scarlet; Messrs. R. & G. CUTHBERT, Southgate, for a low table of bulbous flowers, *Streptosolen Jamesonii* and *Antirrhinums*, edged with drooping plants of the beautiful blue-flowered *Nemophila insignis*; Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, for greenhouse flowers, including fine *Hippeastrums*, *Acacia armata pendula*, *Streptocarpuses*, and perpetual-flowering Carnations; Messrs. J. PIPER AND SONS, Bayswater, for a large exhibit of well-bloomed Clematis and Azaleas, arranged with ornamental-leaved shrubs; a large collection of Alpines, and clipped trees in Bay and Box; Messrs. W. CUTBUSH AND SON, Highgate, for Alpines, flowering shrubs, Carnations and Roses. The dwarf *Geum montanum* gave a bright patch of deep yellow amongst the Alpines. The Roses were arranged in a half-circular group on the floor; Messrs. T. S. WARE, LTD., Feltham, for Alpines, including numerous varieties of Aubrietias, the pink *Lychnis Lagascae*, and *Trillium grandiflorum roseum*.

Silver Banksian Medals to Messrs. R. GILL AND SONS, Falmouth, for Rhododendrons; Messrs. BAKERS, Codsall, for Alpines; Messrs. H. B. MAY AND SONS, Edmonton, for Clematis, *Hydrangea hortensis* in white, blue, and pink varieties, a group of *Hippeastrums*, and a collection of hardy Ferns.

Bronze Flora Medals to Mr. ELISHA J. HICKS, Twyford, Berkshire, for Roses, the outstanding variety being their fine crimson-scarlet single *Princess Mary*. Mr. L. R. RUSSELL, Richmond, Surrey, for flowering shrubs in pots.

Bronze Banksian Medals to Mr. J. C. ALLGROVE, Middle Green Nursery, Slough, for Aubrietias in variety, against a background of the beautiful blush-tinted *Cerasus Watereri*, one of the finest-flowering Cherries; Messrs. WHITELEGG AND PAGE, Chislehurst, Kent, for Alpines, *Spiraea Queen Alexandra*, *Paeonia Moutan* and *Azalea rosaeiflora*, with semi-double salmon-rose coloured flowers. They showed a fine deep yellow Polyanthus with orange centre, named *Chislehurst Yellow*. The habit is dwarf, the stout trusses bearing numerous large blooms. *Primula Veitchii*, bearing tall umbels of rosy-purple flowers, and the new *Silene pennsylvanica*, with clear soft pink flowers, were included in this fine collection; Mr. G. W. MILLER, Wisbech, for hardy flowers in great variety; Mr. G. KERSWELL, Exeter, for flowering plants and bunches of cut blooms of *Gentiana acanthis*, the double-flowered white *Anemone nemorosa*; Messrs. J. CHEAL AND SONS, Crawley, for flowering trees and shrubs and Alpines; Miss DIXON, Edenside, for a good strain of yellow and white Polyanthus; and Messrs. WATERER, CRISP AND SONS, LTD., Twyford, for Alpines.



FIG. 105.—*RIBES CREURUM*.
(Award of Merit, R.H.S.)

short racemes of four blooms; the corolla is tubular, about $1\frac{1}{4}$ inch long, inflated at the throat, and has a two-lipped, five-lobed limb. The exterior is rose-pink, passing to white at the mouth. Messrs. FLETCHER BROS., Chertsey, Surrey, exhibited a dwarf, large-flowered form of *Deutzia discolor* named *major*. The plants

Orchid Committee.

Present: Sir Harry J. Veitch (vice-chairman), Sir Jeremiah Colman, Bart., Jas. O'Brien (hon. secretary), F. J. Hanbury, R. G. Thwaites, Pantia Ralli, E. R. Ashton, F. M. Ogilvie, T. Armstrong, Walter Cobb, A. McBean, J. Charlesworth, W. H. Hatcher, H. G. Alexander, J. E. Shill, A. Dye, W. H. White, S. W. Flory, C. J. Lucas, Gurney Wilson, Stuart Low, R. Brooman-White, De B. Crawshaw, and R. A. Rolfe.

THE LATE CHAIRMAN.

Before commencing the ordinary business of the meeting, Sir Harry J. Veitch referred to the great loss which the committee and the world of horticulture in general had sustained in the death of their chairman, the late Mr. Gurney Fowler. Sir Harry stated that he had worked with the late Mr. Fowler continuously, and had always found him a clever and impartial worker in every respect. His loss left a great blank in the society which would be very difficult to fill. On behalf of the committee he tendered deep sympathy to the members of his family. Sir Jeremiah Colman, Bart., in seconding a vote of condolence, said that he had collaborated with Mr. Gurney Fowler, both on the Royal Horticultural Society and on Government work. By his death horticulture had lost one of its best friends, and the Orchid interest one of its cleverest and most substantial supporters.

AWARDS.

AWARDS OF MERIT.

Miltonia vexillaria Lyoth Shrubbery variety (*vexillaria chelsiensis* × *Memoria G. D. Owen*), from F. M. OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth). A fine form, with large, light-rose coloured flowers, with darker rose veining, the lip having a rich crimson mask at the base, coloured as in the variety *G. D. Owen*, with radiating lines extending from the base, as in the other parent.

Brasso-Laelio-Cattleya Queen of the Belgians, Bryndir variety (*B. L. Digbyano-purpurata* × *C. Mendelii* Princess of Wales), from Dr. MIGUEL LACROZE, Bryndir, Roehampton Lane (gr. Mr. Cresswell). A distinct hybrid with large, well formed, clear-white flowers, the apical half of the lip being rosy-lilac colour, the transition from the white base to the coloured front being clearly defined. The spike bore three flowers.

Odontioda Gratziæ Bryndir variety (*Oda. Charlesworthii* × *Odm. amabile*), from Messrs. FLORY AND BLACK, Slough. A notable addition to the deep red *Odontiodas*, the flowers having much of the tint of *Oda. Charlesworthii*, but with a bronze hue. All the segments are equally broad, and the whole flower is of perfect form. The broad lip has a yellow crest, with chestnut brown blotches in front, and a rose-tinted band at the margin.

Odontioda Aurora (parentage unrecorded), from G. W. BIRD, Esq., The Manor House, West Wickham (gr. Mr. Redden). A showy *Odontioda*, resembling the best form of *Oda. Bradshawiae*, and with large, finely marked flowers. The inner parts of the sepals and petals are heavily blotched with dark red, the margins tinged with rose. The lip is well formed and the crest yellow.

PRELIMINARY COMMENDATION.

Odontoglossum General Townshend (*King Emperor* × *Wilckeanum*), from Messrs. ARMSTRONG AND BROWN, Tunbridge Wells. A model flower, of a deep bronzy-red colour; the segments have a narrow white margin and a small white base.

Odontoglossum Erzerum (*Fascinator* × *crispum*).—The flowers are heavily blotched with claret-purple, the margins being white.

GENERAL EXHIBITS.

F. M. OGILVIE, Esq., The Shrubbery, Oxford, showed *Miltonia Violetta*, a charming hybrid of unrecorded parentage, with clear white flowers, with rose-purple bases to the petals and crimson mask at the base of the lip.

C. J. LUCAS, Esq., Warnham Court, showed *Laelio-Cattleya George Branch* (*blechleyensis* × *G. S. Ball*), a pretty flower of medium size.

G. W. BIRD, Esq., West Wickham, showed

Odontioda Trebizond (*Odm. Fascinator* × *Oda. Charlesworthii*), a rose-coloured flower, with purple blotches.

Messrs. CHARLESWORTH AND Co., Haywards Heath, showed a select group in which their fine forms of *Miltonia Charlesworthii*, *M. vexillaria* Lyoth, and *M. Bleuana* were notable features. Two specimens of the pure white *Brasso-Cattleya Digbyano-Schroderae* var. *Bradshawiae*, a goodly selection of richly-coloured *Odontiodas* and *Odontoglossums*, and *Cattleya Schilleriana* and other species, were also noted. (Silver Flora Medal.)

Messrs. SANDER AND SONS, St. Albans, staged a group with an interesting selection of rare species, the central plant being a tall specimen of the remarkable *Angraecum infundibulare*, with two large flowers. Good varieties of *Cattleya Schroderae*, *Odontoglossums*, *Odontiodas*, and *Dendrobiums* were included in the collection. (Silver Banksian Medal.)

Messrs. STUART LOW AND Co., Jarvisbrook, Sussex, staged an attractive group, in which were good specimens of *Dendrobium Jamesianum*, *D. Dalhousibile*, and other *Dendrobiums*; *Brasso-Cattleya Queen Alexandra*, and some pretty *Laelio-Cattleyas*; and the pure white *Cattleya Schroderae alba Purity*. (Silver Banksian Medal.)

Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, showed a selection of their fine *Odontoglossums* and *Odontiodas* flowering for the first time, also a new large yellow and red form of *Odontioda Madeline* (*Oda. Charlesworthii* × *Odm. crispum*); *Oda. Royal Gem* var. *violacea* of a very pretty tint, and *Odontoglossum Trebizond* (*King Emperor* × *eximium*), a charming flower of fine shape.

SAMUEL H. LANE, Esq., Worton Manor, Isleworth, sent *Epidendrum variegatum* var. *coriaceum*. The smaller form figured as *E. conacem* in *Bot. Mag.*, tab. 3,595.

Messrs. FLORY AND BLACK showed their new yellow *Sophrone-Laelio-Cattleya xanthina* (*S.-L. Psyche* × *L.-C. Ophir*), a very attractive flower; fine forms of *Sophroneitis grandiflora*, one with fourteen large scarlet blooms, and a pretty hybrid *Odontoglossum*.

Mr. C. F. WATERS, Balcombe, staged a group of *Dendrobiums*, excellently well flowered, arranged with *Odontoglossum crispum*.

Narcissus Committee.

Present: Rev. G. Engleheart (chairman), Messrs. J. Duncan Pearson, Peter R. Barr, C. L. Adams, G. W. Leak, W. W. Fowler, Joseph Jacob, H. Smith, W. Poupert, F. Herbert Chapman, W. Copeland, and Chas. H. Curtis.

AWARDS OF MERIT.

Narcissus St. Hurio (Show).—A Leedsii variety (iv.b), with flat, regular white perianth and pleated eye, the latter tipped with gold colour, yellow also appearing in blotches in the basal part. The pretty corona is one inch across. Shown by Messrs. J. R. PEARSON AND SONS.

Narcissus White Knight (Show).—A beautiful cream-white Trumpet variety; the trumpet is long, narrow, of beautiful round shape and set off by a wide recurving rim with frilled margin. The perianth is a paler shade of cream than the trumpet. Shown by Messrs. R. H. BATH, LTD.

Tulip Samson.—An early single variety of globular shape, with petals of deep orange colour, flushed on the outer side with a purple sheen. It is a stout, bold flower, and suitable as an early bedding variety. Shown by Messrs. JAMES CARTER AND Co.

GROUPS.

Silver-gilt Banksian Mobils were awarded to Messrs. BARR AND SONS, King Street, Covent Garden, for Daffodils and Tulips and Messrs. R. H. BATH, LTD., Wisbech, for Daffodils.

Fruit and Vegetable Committee.

Present: Mr. J. Cheal (vice-chairman), Rev. W. Wilks, Messrs. W. J. Jefferies, W. Bates, E. Beckett, F. Perkins, A. R. Allan, G. Kelf, A. Bullock, G. Reynolds, E. A. Bunyard, J. Jaques, J. Harrison, and Owen Thomas.

A Bronze Knightian Medal was awarded to

Mr. P. EDLINGTON, The Mount, Whitechurch, Shropshire, for a collection of Apples and a dish of Verulam Pears.

THE LECTURE.

Mr. LEES, of Long Ashton, in the course of an interesting lecture on the properties of spray fluids used for the prevention or destruction of plant pests, described experiments carried out recently at Long Ashton on the adhesiveness of paraffin-soap emulsions of different strengths. The several spray fluids were tested by their wetting effect on three different vegetable tissues, clean Gooseberry leaves, Seakale leaves, which, by reason of their bloom, are less readily wetted, and leaves of Gooseberry covered with a fretwork of mycelium of American Gooseberry mildew. The result showed that a 2 per cent. emulsion produces most wetting. The emulsion is composed of 2 lbs. of soft-soap, 3 pints of paraffin, and 10 gallons of water. An emulsion of this strength wets not only the easily-wetted Gooseberry leaf and the less easily wetted Seakale leaf, but also—in a nearly complete manner—the fretwork of mycelium of American Gooseberry mildew.

MIDLAND DAFFODIL.

APRIL 27, 28.—Although there were fewer exhibitors than usual the number of entries exceeded 440 at the above society's eighteenth annual show, held at the Edgbaston Botanical Gardens, Birmingham, on the 27th and 28th ult. The absence of the Rev. G. H. Engleheart, Messrs. E. M. Crosfield, and P. D. Williams, whose exhibits of choice seedlings always compel admiration, was regretted. Still, there were very many excellent seedlings exhibited on the present occasion by Messrs. Ware, Wilson, Chapman, Lower, Adams, and others. Mr. Adams is to be congratulated upon his success in the classes for seedlings and new varieties, in which he secured five first prizes and one second prize.

OPEN CLASSES.

CUT BLOOMS.—There is always good competition in the class for fifty distinct varieties, each being staged in separate vases, to hold three stems. The 1st prize was awarded to the Rev. JOSEPH JACOB, Whitechurch, whose flowers were bright and fresh, and well arranged. The following varieties were of exceptional merit:—Pedestal, Sunset, Fairy Queen, Whitewell, Ailsa, Hela, Matthew Arnold, The Nun, Bernardino, Endurance, Sybil Foster, President, Buttercup, The Doctor, Selene, Cleopatra, and several unnamed seedlings. 2nd, Mr. C. BOURNE, Bletchley, with handsome flowers of Cleopatra, Lord Kitchener, Queen of the North, Whitewell, Norma, Noble, Bernardino, Golden King, and White Queen. 3rd, Dr. N. Y. LOWER, Presteign.

In the following 14 classes three stems of each variety were required:—

Twelve Varieties of any Trumpet Daffodils.—Mr. C. BOURNE excelled with large specimens of White Knight, Cygnet, Diogenes, Treasure Trove, Queen of the West, Golden Idol, Mrs. J. H. Veitch, Monarch, White Emperor, The Doctor, Princess, and Cleopatra. Miss POPE, King's Norton, Birmingham, and Mr. J. MALLENDER, Bawtry, were bracketed equal 2nd.

Six Varieties of Yellow Trumpet Daffodils.—Mr. C. BOURNE was again awarded the 1st prize. He showed fine flowers of Mrs. J. H. Veitch, Lord Roberts, The Doctor, Golden Idol, Monarch, and Cleopatra. 2nd, Mr. J. MALLENDER, whose best flowers were The Colonel and Bangora. 3rd, Miss POPE.

Six Varieties of White Trumpet Daffodils.—Mr. BOURNE was again placed 1st, with beautiful blooms of Loveliness, White Knight, White Empress, Treasure Trove, Princess, and Agatha. 2nd, Miss POPE, in whose exhibit we observed a very promising variety, labelled S. 92.

Six bicolor Trumpet Varieties.—1st, Rev. JOSEPH JACOB, who had charming flowers of Cygnet, Olympia alba, Vestal, and Virgin. 2nd, Miss POPE, whose best flowers were Middleton Favourite, and No. 697. Mr. J. MALLENDER and Mr. E. H. WOOD, Ludlow, were placed equal 3rd.

Six Incomparabilis Varieties.—1st, Mr. C. BOURNE, who showed Mrs. William Myles,

Solfaterre, Gloria Mundi, and Giraffe finely; 2nd, Rev. JOSEPH JACOB.

Six Incomparabilis Varieties (Division 2 B).—The above order was reversed. Mr. JACOB had splendid flowers of Lady Moore, Great Warley, President, Whitewell, Bernardino, and Chryseis. Mr. BOURNE's exhibit included Whitewell, Great Warley, and an unnamed variety, in excellent condition.

Six Barrii Varieties (5 A).—1st, Miss J. S. WILSON, Bridgewater, whose flowers were all beautifully clean and fresh, but the varieties were not named. 2nd, Mr. C. BOURNE, whose flowers of Eschscholzia, Ornament, and Little John were meritorious. 3rd, Mr. HERBERT CHAPMAN.

Six Barrii Varieties (5 B).—1st, Mr. A. M. WILSON, Bridgewater, with unusually long, strong-stemmed unnamed varieties. 2nd, Mr. HERBERT CHAPMAN. 3rd, Mr. C. BOURNE.

Six Leedsii Varieties (4 A).—1st, Rev. JOSEPH JACOB, who showed Thora, White Mere, Nava, Mrs. W. O. Wolseley, Mogador, and a seedling. 2nd, Mr. C. BOURNE, with clean, fresh flowers, those of Kittiwake and Adrian being unusually good. 3rd, Mr. E. H. WOOD.

Six Leedsii Varieties (4 B).—1st, Mr. C. BOURNE, with Little Joan, Hendy, Queen of the North, Hyppatia, Undine, and Evangeline. 2nd, Mr. E. H. WOOD.

Three Triandrus Hybrid Varieties.—1st, Mr. C. BOURNE, with beautiful specimens of Marie Hall, Maid Monica, and Lemon Belle. 2nd, Mr. HERBERT CHAPMAN.

Six Tazetta and Tazetta Hybrid Varieties.—1st, Rev. JOSEPH WOOD, with superior flowers of Orange Cup, Triumph, Sunset, Orange Blossom, and two seedlings. 2nd, Mr. E. H. WOOD.

Nine Poeticus Varieties.—1st, Mr. A. M. WILSON, with exceptionally fine flowers of Bridget, Alpha, Sonata, Madrigal, Bret Harte, and others. 2nd, Mr. HERBERT CHAPMAN.

In a class for *six varieties* restricted to flowers with perianths not exceeding three inches in diameter, Mr. C. BOURNE won the 1st prize with dainty specimens, among which Eschscholzia and Little Joan were much admired. 2nd, Rev. JOSEPH JACOB, whose exhibit contained a very fine specimen of Lorna Doone.

Single Bloom Classes.—These classes were well filled. *Yellow Trumpet*.—1st, Mr. H. C. CAVE, Bristol, with Marquis, a deep, clean yellow flower of good size and form. *White Trumpet*.—1st, Dr. N. Y. LOWER, with an unnamed seedling, which was past its best condition. 2nd, Rev. JOSEPH JACOB, with a shapely flower of White Knight. *Bicolor Trumpet*.—1st, Mr. HERBERT CHAPMAN, with Beaufeast. 2nd, Mr. C. LEMESLE ADAMS, with an unnamed variety. *Yellow Incomparabilis*.—1st, Dr. N. Y. LOWER, with an unnamed variety. *Bicolor Incomparabilis*.—1st, Mr. A. M. WILSON, with Best Man. 2nd, Mr. P. J. WORSLEY, with Frejus. *Bicolor Barrii*.—1st, Mr. HERBERT CHAPMAN, with Crimson Braid, a magnificent flower. 2nd, Mr. W. B. CRANFIELD, with Melpomene. *White Leedsii*.—1st, Mr. W. B. CRANFIELD, with Miss E. M. Bowling, an exquisite flower, with a cream-coloured perianth and frilled cup, suffused with pink. 2nd, Mr. P. J. WORSLEY, with Erigal. *Leedsii*.—1st, Mr. HERBERT CHAPMAN, with Moonbeam, a beautiful pure white flower. *Triandrus Hybrid*.—1st, Mr. W. B. CRANFIELD, with Venetia, also pure white and of good form. *Jonquilla Hybrid*.—1st, Rev. T. BUNCOMBE, Black Torrington, with Buttercup. *Tazetta or Tazetta Hybrid*.—1st, Mr. A. M. WILSON, with 374. *Poeticus*.—1st, Captain H. G. HAWKER, Ivybridge, with Dulcimer. *Double Daffodil*.—1st, Mr. W. E. M. COPLAND, Southampton, with Mary Copeland.

SEEDLINGS.

The Bourne Cup was offered for twelve distinct seedlings raised by the exhibitor. Mr. WALTER T. WARE's collection, which gained the award, was thoroughly representative and strikingly handsome, every flower being of first-class quality. The varieties were Domine, Carita, Grotas, Girdler, Summein, Pera, Pax, Citta, Fortune, Odethe, Torchbearer and Lanchia. 2nd, Mr. A. M. WILSON, whose flowers were beautifully fresh and dainty, but with one exception (Elfin) all were shown under numbers.

The class for *six seedling varieties* raised by the exhibitor but not yet in commerce was an interesting one. The 1st prize was won by Dr. N. Y. LOWER with dainty flowers, but all except Fireball were unnamed.

There was keen competition in the class for *three varieties of seedlings* raised by the exhibitor and not in commerce. The 1st prize was awarded to Mr. C. LEMESLE ADAMS, who showed Leedsii Waif and two excellent unnamed Trumpet varieties. 2nd, Rev. T. BUNCOMBE.

A new class called "Bantam" seedling was provided for *six varieties of seedlings* raised by the exhibitor. The schedule stipulated that no perianth was to exceed 3 inches in diameter. The 1st prize was won by Mr. A. M. WILSON with choice unnamed varieties; 2nd, Mr. C. LEMESLE ADAMS. In a similar but smaller class the last-named exhibitor took the lead with superb flowers of Ruby Gem, Pendeford Apricot and No. 135 B.B.

Mr. C. LEMESLE ADAMS was again placed 1st in the Novice Seedling Challenge Class for *three varieties of seedlings* raised by the exhibitor and not in commerce; 2nd, Mr. J. H. PADLEY, Worksop.

In a class for *six seedling varieties* that have not been in commerce more than four years Dr. N. Y. LOWER beat Captain H. G. HAWKER, Ivybridge. The flowers in the 1st prize exhibit were Harpajon, Ringdove, and The Sahib. Captain HAWKER's Dulcimer and Idris were magnificent.

For *three varieties* (any division) that have not been in commerce more than four years Mr. C. LEMESLE ADAMS was again successful. His specimen of Rosemorean Giant was uncommonly large and good. 2nd, Miss POPE.

The Herbert Chapman Poeticus Trophy was offered for *three Poeticus varieties* not in commerce. It was won by Mr. A. M. WILSON with choice specimens of Alpha, No. 835 and No. 190. 2nd, Mr. HERBERT CHAPMAN, who had Odyssey, Bolero and Triolet.

The Walter Ware Challenge Cup was offered for nine varieties of obvious Triandrus hybrids. In this class Mr. HERBERT CHAPMAN was successful with grand flowers, in which Diamond Pendant and White Hart were conspicuous examples.

For *three varieties of Daffodils* which need not have been raised by the exhibitor, the Rev. JOSEPH JACOB won the 1st prize with Olympia alba, Hela, and an unnamed seedling. 2nd, Mr. HERBERT CHAPMAN.

The White Daffodil Trophy, offered for six varieties of white Trumpets that have not been in commerce more than four years was won by Mr. C. LEMESLE ADAMS, with White Wax and two unnamed varieties.

AMATEURS' CLASSES.

The leading class in this section was for thirty varieties, to be shown under the same conditions as the group-class in the open section. The 1st prize was won by the Rev. T. BUNCOMBE, Black Torrington, with Epic, Aftermath, Lady Moore, Noble, Marina, Candidata, Victory, Steadfast, Amber, Horace, and others. 2nd, Mr. T. BATSON, 3rd, Mr. H. R. DARLINGTON, Potters Bar.

Nine Trumpet varieties. The last-named exhibitor was placed first with pleasing flowers of Mrs. G. H. Barr, Madame de Graaff, Treasure Trove, and Weardale Perfection. 2nd, Canon FOWLER, Reading.

Mr. T. BATSON, Beaworthy, won the 1st prizes in the classes for (a) *three yellow Incomparabilis varieties* with splendid examples of Home-spun, Gloria Mundi, and Leonie, and (b) *three bicolor Incomparabilis varieties* with Chryseis, Will Scarlet, and Whitewell.

The Rev. T. BUNCOMBE excelled in classes for (a) *three Barrii varieties*, 3a, (b) *three Barrii varieties*, 3b, and (c) *three varieties of any daffodil*, no perianth to exceed 3 inches in diameter. Yellow Poet, Beacon, and Ethelbert were well shown in the last-named class.

Six Leedsii Varieties (4 A).—1st, Mr. H. R. DARLINGTON, with exquisite flowers of Waterwitch, White Countess, and Potent. 2nd, Mr. T. BATSON. *Six Leedsii Varieties* (4 B).—1st, Canon FOWLER, whose best flowers were Evangeline, White Lady, and Bianco. 2nd, Mr. T. BATSON.

For Three Varieties of Tazetta and Tazetta Hybrids.—Mr. H. R. DARLINGTON won the 1st prize with shapely specimens of Jaune à Merveille, Elvira, and Klondyke. 2nd, Canon FOWLER. *Six Poeticus Varieties*.—1st, Miss V. WARREN, Canterbury, with long, strong-stemmed flowers of Epic, The Bride, Ben Jonson, Homer, Horace, and Cassandra. 2nd, Mr. T. BATSON, with smaller flowers of excellent quality. Canon FOWLER showed the best three varieties of Double Daffodils, closely followed by Mr. H. R. DARLINGTON.

MESSRS. ROBERT SYDENHAM, LTD., offered prizes for twelve varieties of Daffodils. Miss V. WARREN, Canterbury, was placed 1st, and Mr. A. TAYLOR, Solihull, 2nd.

MESSRS. CARTWRIGHT AND GOODWIN offered prizes for six varieties of Daffodils. The 1st prize was won by Mr. G. STOCKS, Doncaster.

The open class provided for a decorative arrangement of cut Daffodils on circular tables 2½ feet in diameter, was well contested. The 1st prize was won by the Rev. JOSEPH JACOB, who employed the variety Lady Moore, relieved with Maidenhair Fern, and long sprays of Asparagus Sprengeri.

Medals offered by the Birmingham Botanical and Horticultural Society were awarded as follows:—Classes 2 to 30: *Silver Medal* won by Mr. C. BOURNE, with 110 points. *Bronze Medal* by Rev. JOSEPH JACOB, with 80 points. Classes 16 to 30, and 31 to 43: *Silver Medal* won by Mr. HERBERT CHAPMAN, with 61 points. *Bronze Medal* by Mr. C. LEMESLE ADAMS, with 55 points. Classes 16 to 30, and 44 to 57: *Silver Medal* won by Mr. H. R. DARLINGTON, with 84 points. *Bronze Medal* by Mr. T. BATSON, with 77 points.

AWARDS OF MERIT.

Poeticus Alpha (Show).—Exhibited by Mr. A. M. WILSON. *Barrii Crimson Braid* (3 B), shown by Mr. HERBERT CHAPMAN. *Triandrus venetia*, shown by Mr. W. B. CRANFIELD.

HONORARY EXHIBITS.

The following medals were awarded to non-competitive exhibits:—

Gold Medal to MESSRS. BARR AND SONS, King Street, Covent Garden, for Daffodils. *Silver-gilt Medals* to MESSRS. J. R. PEARSON AND SONS, Loddham, for Daffodils; MESSRS. BAKERS, Codsall, for Alpines; MESSRS. JOHN WATERER, SONS, and CRISP, Twyford, for Alpines; Mr. CLARENCE ELLIOTT, Stevenage, for Alpines; Mr. GEORGE PRINCE, Oxford, for Roses; MESSRS. WEBB AND SONS, Stourbridge, for Cinerarias, Primulas, and Schizanthus. *Large Silver Medals* to ROBERT SYDENHAM, LTD., Birmingham, for Daffodils and Tulips; MESSRS. JAMES CARTER AND CO., Raynes Park, for Daffodils.

BRITISH GARDENERS'.

APRIL 24.—The twelfth annual conference of the above Association was held at the Wellington Rooms, St. John's Wood, on Easter Monday. About forty members were present, including several representatives of branches of the Association. The chairman, Mr. E. F. Hawes, presided.

The minutes of the last annual conference, held at Leamington, were read and confirmed.

The annual report of the executive council for 1915 was read by the general secretary. Afterwards the financial statement was submitted.

The following are extracts from the report:—

EXTRACTS FROM THE REPORT.

We are able to state that we have got through the year comparatively well, although we have to deplore the loss of various kindred organisations. The Association has been able to do good work for its members, and we have every reason to think that the worst of our troubles have been overcome. National service has claimed at least 500 of our members, and few are coming in to take their places. The "Derby" scheme will result in many more being called away, but there should be sufficient members left behind to keep the fabric of the Association intact until our comrades return.

The Edinburgh branch is to be congratulated upon its success in obtaining an increase of 1d. per hour in the wages of gardeners in their district. The Association has also worked for the war bonus granted to L.C.C. employees, and has endeavoured to obtain increases at Leamington. A letter was sent to the Press throughout the country asking employers to concede

bonuses or increased wages to gardeners, and the results were very gratifying, many employers adopting the suggestion.

The need for a measure for compelling employers to give a reference to employees leaving their service has been very marked during the year, and your Executive is getting in touch with other organisations affected, so that a workable measure can be drafted and presented to Parliament at the earliest possible moment. Numerous situations have been filled, but the demand for men, except for Head Gardeners, has greatly exceeded the supply. The number of applications for employees was 115 and the number of situations filled 51. Many letters of advice regarding prospective situations have been sent to members.

At the last Conference it was decided that a ballot of the membership be taken as to the "desirability of the B.G.A. being recognised as a Trade Union." On enquiry it was found that according to law, the B.G.A. is a Trade Union (unregistered), and under the circumstances your Executive thought it unnecessary to proceed further in the matter. This decision was arrived at after a full and careful enquiry.

Two hundred and twelve new members have been elected during the year, many of whom have since been called up for military service.

In accordance with the instructions given at the last Annual Conference, a scheme for a co-operative garden has been prepared, and will be submitted to intending members of the new society after the close of the Conference.

Forty members have applied for advice and assistance during the year. A legal period of notice was obtained for members in 10 cases, and wages due in lieu of notice in five cases, the money obtained amounting to £14 3s. 6d. Other cases dealt with were in connection with removal expenses, undue increases of rent, damages for breaches of agreement, lost personal effects, unjust claims for cash alleged to be due, and refusal of employers to give characters. The Association was able to assist the Metropolitan Police in tracing a book canvasser who had been defrauding gardeners for some years, and in securing his conviction at the Old Bailey.

PROCEEDINGS.

The Chairman formally moved the adoption of the report and balance sheet, and stated that the executive council felt that the members had every reason to congratulate themselves upon the progress made. Mr. Claude Fletcher (North London Branch) seconded. Several members spoke in favour of the report, but criticism of several items was made by Mr. John Weathers. The report was adopted as presented, and carried nem. con.

Mr. Weathers proposed the following motion:—

"That a special committee of inquiry, consisting of seven members (not to include any member of the executive council) be appointed to consider and enquire into the policy and causes that have reduced the B.G.A. to such a grave and critical financial condition, both before and since the war; and that such special committee be empowered to call for and examine all or any books or documents of the Association, and to submit a report to a future meeting of the Association to be specially convened for the purpose in London."

This was seconded by Mr. H. Curtis, Northampton. Mr. Fulton, of Harrow Weald, supported the motion. Discussion took place as to what Mr. Weathers meant by his resolution, and, in reply, he stated that he did not wish to attack or question the accounts as audited and presented, but fully to consider the policy of the Association.

An amendment was moved by Mr. H. S. Bowell, representing the Hampton Branch: "That this conference warmly resents the continuance of Mr. Weathers' unjustifiable attacks upon the alleged mismanagement of B.G.A. affairs, and expresses its unwavering confidence in the officers and executive council, and its hearty appreciation of their strenuous efforts to maintain the efficiency of the Association during a period of unprecedented strain and anxiety, due to the devastating warfare of nations."

On a vote being taken the amendment was carried, only three members voting against it. At this stage of the proceedings the meeting adjourned for lunch.

On resuming business Messrs. W. Bignell, Highgate; W. H. Jenkins, Beckenham; S. G. Brunt, Child's Hill; G. H. Head, Twickenham; Jean Bintner, Kew; J. Craik, West Norwood; J. Dobson; J. S. Dakers, Forest Hill; W. R. Lyford, Harrow Weald; and J. A. Little, Highgate, were elected to serve on the executive council.

Mr. R. Greenfield, who has obtained 51 new members during the past year, was, on the motion of Mr. T. Winter, awarded the Association's Gold Medal for "his services in forming new branches and obtaining new members during the past few years."

An amendment to a motion from Kew "seeking to obtain an universal eight hour day for all horticultural workers," moved by Mr. A. E. Cresswell, Central London, read as follows:—

"That steps be taken to obtain a reduction in the hours of labour for all horticultural workers." This was duly carried as a substantive motion.

A motion by the Watford Branch to increase the number of attendances necessary to retain a seat on the executive council, and also the amendment by Central London, was not proceeded with.

The following motion by the executive council was moved by Mr. C. Fletcher:— "This annual conference of the B.G.A. protests against the policy now being practised by the War Office, of discharging men without pension or provision, who become physically unfit during or after their training for military service, and



THE LATE JOHN WRIGHT, V.M.H.

demands that the department responsible should without delay make proper and sufficient provision for all men so discharged, who had been accepted for military service."

The motion was carried unanimously.

A scheme for the organisation of all persons working in the horticultural industry and not eligible for membership under the present rules was approved by the conference, and will be submitted to a general ballot of the members.

On the motion of Mr. Robert Greenfield, Leamington, supported by Mr. J. Dyfri Jones, Birmingham, it was resolved to hold next year's conference at Birmingham.

BRITISH CO-OPERATIVE GARDENERS.

A meeting to inaugurate this society was held after the B.G.A. conference. The sub-committee presented its report, and this was adopted. Offers of land in Buckinghamshire, Berkshire, Kent, Surrey, Middlesex, and Hertfordshire were considered, and eventually an offer of about 10 acres at Stevenage was provisionally accepted. With the aid of the Agricultural Organisation Society rules have been prepared, and

these were adopted by the meeting for the purpose of registration. The following officers were provisionally elected:— President, E. F. Hawes; secretary, Cyril Harding; committee, Messrs. J. Dobson, C. W. Proude, C. Fletcher, R. W. Smith, F. L. Baker, T. Winter, G. Rimmer, E. P. Cooper, G. P. Berry, and A. G. Brunt.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

APRIL 13.—*President*: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Cypher, A. G. Ellwood, J. Evans, P. Foster, A. R. Handley, A. Hammer, A. J. Keeling, D. McLeod, W. Shackleton, S. Swift, H. Thorpe, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum *Apert Empress*, a large white flower of good shape and substance; *Dendrobium Thwaitesiae*, "West Point" var., a fine flower, measuring 4 inches across; *Odontoda General Townshend*, a round flower, with yellow ground and even blotches of a brown shade on the sepals and petals; the lip has a blotch in the centre. All these shown by S. GRATRIX, Esq.

Odontoglossum × *General Townshend*, a large, round flower, heavily and evenly blotched with a light purple shade; *Miltonia viciaria* var. "Warsleyi." Both these shown by Tom WORSLEY, Esq.

Odontoglossum crispum canthotes var. "Cloth of Gold," a large flower of good form, with bright golden-coloured markings, from Mrs. GRATRIX.

Oncidium McBeanianum (*superbium* × *macranthum*), from Messrs. J. and A. McBEAN.

AWARDS OF MERIT.

Cypripedium His Majesty (*Pollettianum* × *German Opair*), *C. Memoria Anna Grant* (*Laurucianum* × *Maudii*), and *Odontoglossum Pomeroyi* "Carter Place" var., all from Tom WORSLEY, Esq.

Cypripedium Lowryi (*aurum* × *Lathamianum*), from the Rev. J. CROMBLEHOLME.

Odontoglossum ardentissimum "Haddon House" var., from P. SMITH, Esq.

Lycaste unschottiana aurea (*cruenta* × *Skinners*), from A. J. KEELING AND SONS.

DOVER HORTICULTURAL.

At a recent meeting of the Dover Horticultural Society the treasurer reported that there was a balance of nearly £14 in hand. It was decided to continue the suspension of the society's work until the termination of the war.

Obituary.

JOHN WRIGHT, V.M.H.—We regret to record the death on Tuesday last of Mr. John Wright, V.M.H., one of the veterans of horticulture and for many years editor of *The Journal of Horticulture*. Mr. John Wright was born in 1836, and began his long and honourable career at the age of eight. After working for two years on a small garden plot he became garden-boy at the neighbouring Hall, and rose so rapidly that at 24 years of age he became head gardener. It was during his years of service with the Melvilles at Braunston, Lincolnshire, that Mr. Wright began to gather to himself fame as a gardener and as a teacher of gardening. That fame, established first in the neighbourhood of Braunston, spread in course of time to London, and, thanks to the vigour and knowledge displayed by his contributions to horticultural journalism, Mr. John Wright was invited by the editors of *The Journal of Horticulture*, Dr. Hogg and Mr. C. W. Johnson, to join the staff of that paper. He became sub-editor in 1875, and after nearly 20 years of hard and valuable work he succeeded Dr. Hogg as editor, a position which he occupied for several years. In 1897 he was one of the 60 persons eminent in horticulture

who received the Victorian Medal of Honour, and nine years earlier his famous essay on fruit culture was awarded the Gold Medal offered by the Fruiterers' Company, and this award brought its author the membership of the Company and the Freedom of the City of London. Other similar honours which his wide knowledge and facility of expression brought him included a gold medal offered by Dr. Hogg for an essay on fruit cultivation, and in 1904 the Veitch Memorial Medal, presented by the trustees in recognition of his strenuous and successful labours on behalf of horticulture. Mr. Wright's wonderful powers of work are illustrated most remarkably, perhaps, in the way in which, whilst engaged in the arduous labour of a gardener, he made good the defects of a school education. At the age of eight he began his work, and in spite of long hours and heavy labour, he found time to so educate himself that he was not only able to garden but also to teach others by his pen how to cultivate plants. The self-denial, strength and determination which enabled Mr. Wright to

"Grapple with his evil star
And make by force his merit known"

deserve no less the admiration of the present generation than the warm recognition they were accorded by his contemporaries, amongst whom these virtues of success were not uncommon.

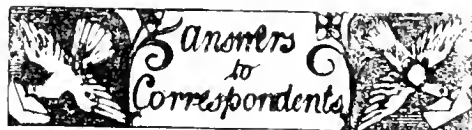
Mr. Wright's energy was, however, by no means exhausted by his journalistic duties. He found time to produce a series of elaborate Guides—Fruit Growers' and Flower Growers' and Vegetable Growers'—which must have taxed his powers as they undoubtedly added to his reputation. He served for many years on the Fruit and Vegetable Committee of the R.H.S., until failing health compelled him to retire from active participation in the committee's work. There are many whose opinions are worthy of respect who regard Mr. Wright's labours on behalf of school gardening as the greatest of all his contributions to horticulture. His long association with the Technical Education Committee of the Surrey County Council began so long ago as 1891, and arose as a result of an invitation which he received from the late Mr. A. H. Snell, of Carshalton, to address a meeting of working men on the subject of gardening. By good fortune the Chairman of the Council, the late Mr. E. J. Halscy, attended the meeting, and having listened to Mr. Wright he observed, at the conclusion of the lecture, "That is the thing I want to see promoted in the county, and you, Mr. Wright, are the man to do it." A scheme of lectures was drawn up, gardening was made a subject of technical education, and courses were held for the benefit of cottagers and amateurs. From this scheme grew the establishment of continuation, or night-school, gardens. Under Mr. Wright's energetic control Surrey took the lead in this pioneer work; country experts and judges were appointed, and shows were instituted, and gardening received a great stimulus. In 1902, when the control of elementary education was transferred to the County Councils, school gardens were established, and it fell to Mr. Wright to supervise and advise upon them. How well he carried out this important work may be judged from the fact that when, from failing health, he found himself obliged to relinquish it there were in the county no fewer than 100 school gardens and 2,000 separate plots. Here is work of which any man might well be proud. It will endure to the memory of a strenuous, energetic man, one who without other advantages than health and strength and determination made from the humblest of beginnings a fine career and in the course of it wrought benefit to his fellow-men.

Deceased leaves two daughters and three sons. Of the latter, Walter was for some years editor of the *Gardener*, and chief horticultural instructor for the Kent County Council; Horace was editor of the *Journal of Horticulture* until December, 1915; and Frank is the present superintendent of Victoria Park, London. The interment takes place at Wandsworth Cemetery (Earlsfield Station, L. & S.W.R.), on Friday, May 5, at 2.50 p.m. Deceased requested that no flowers should be employed at the ceremony.

THOMAS GLEN.—We regret to announce the death of Mr. Thomas Glen, which took place on Easter Monday. For many years deceased was gardener to Mrs. Montefiore, of Worth Park, and was well known latterly as southern representative of Messrs. H. Scott and Sons. Mr. Glen was a native of Baddington. He was one of the oldest members of the Horsham Horticultural Society.

JOSEPH WHEELER.—It is with deep regret that we announce the death of the late Mr. Joseph Wheeler, of Putney, late trustee of the United Horticultural Benefit and Provident Society, who passed away on April 18 at the age of 81. The interment took place at the Putney Vale Cemetery on Tuesday, April 25.

W. F. COOLING.—We regret to learn of the death of Mr. William Frederick Cooling, of the well-known firm of George Cooling and Sons, Bath, which took place on the 2nd inst. Mr. Cooling, who was 62 years of age, was the eldest son of the late Mr. George Cooling, and had for a long period been associated with his father and brother in the management of the business. He was an expert rosarian and was a member of the council of the National Rose Society. He was a member of the committee of the Bath Floral Fête, and did much to contribute to the success of that annual exhibition. Mr. Cooling was president of the Bath Gardeners' Association and a member of the Somerset Agricultural Association. His death will be regretted, not merely in his native city, but in the wider circle of horticulture of which he was an honoured member.



CHRYSANTHEMUM LEAF-MINER: *A. W.* Remove badly affected leaves and burn them. Spray the plants with quassia extract, or some other bitter liquid, to deter the female insect from laying her eggs on the leaves. Repeat the spraying at intervals.

FLOWERING HEDGE FOR A SMALL GARDEN: *D. M.* Seeing that you require the hedge to keep out cats and dogs, Roses would not be suitable unless the plants were trained on a close fence. Larch poles placed crosswise and covered with wire netting could be used to train Rambler varieties. At Chalkwell Park, Westcliff, there is a dense hedge of William Allen Richardson Rose grown in this way, and it is a most beautiful object in summer. Sweet Briar is also suitable. You mention the Barberry as a possible hedge plant, and this is sometimes used, the three species most commonly employed being *Berberis vulgaris*, the common Barberry, *Berberis dulcis*, the Box-leaved Barberry, and *B. Darwinii*. Lilacs and *Rhododendron ponticum* are largely employed for hedges, but they would not be impenetrable to the animals you mention. Double-flowered Gorse, *Cytisus japonica*, Lavender, and Rosemary offer a further selection of flowering plants. Apart from flowering plants, Holly will form a useful hedge in three or four years from planting. The Yew also makes a good hedge, but does not grow so well near a large town as in the open country. Box makes satisfactory hedges up to six feet high, but is not very easily restored if the plants fall into bad health for any reason. Privet is a useful hedge plant, and the golden-leaved variety is employed for this purpose in many of the London suburbs.

NAME OF FRUIT: *J. W.* Apple Reinette Van Mons.

NAMES OF PLANTS: *J. T.* Helixine Soleirolia.—*C. W. S.* Sheffield. *Dendrobium nobile*.

PEACH FLOWERS FAILING TO SET: *R. M.* It is difficult to account for the many failures which have occurred this season in the setting of Peaches. The unfavourable weather at the time the trees were in bloom made it necessary to

exercise the greatest care in the management of the trees. From the smallness of the flowers it is possible that the trees have suffered from lack of moisture at the roots, owing to the root pruning and the light nature of the soil, which you state rests on a gravel subsoil. Mulch the trees lightly, and attend carefully to watering and syringing during the ensuing season.

PELARGONIUMS ATTACKED BY INSECT: *T. C.* It is impossible for us to say at what stage, or at which period, your plants became attacked by the pest you describe. If Pelargoniums were cultivated on the same ground the previous season, the larvae may have been present in the soil. Should the plants be again attacked this season send us a specimen for examination, with the grubs on it. Neither identification nor any indication of a remedy is possible without our seeing the grubs in question.

POULTRY MANURE: *London.* Poultry manure is a valuable plant stimulant, but, being very strong, should be carefully and rather sparingly used, and always in a dried state. One method is to mix it well with plenty of fine soil before spreading it on the land. Poultry dung may be used for making liquid manure in the proportion of one peck of dung to forty gallons of water. It should be allowed to stand for twenty-four hours. If used for fruit trees and other crops out-of-doors apply it once a week at the rate of 2 gallons per square yard of ground. We cannot say for what other purposes poultry manure would be used besides fertilising.

PROPAGATING CALCEOLARIA CLIBRANII: *H. W. B.* Insert the cuttings of *Calceolaria Clibranii* in the third week of October; keep the frame close, cool, and moist. The temperature should be kept low until top growth commences.

PRUNING AN OUTDOOR FIG TREE: *A. Cannon.* Prune the plant at once, cutting out some of the branches where they are growing thickly, leaving only sufficient shoots to furnish the wall with fruit-bearing wood. The summer treatment consists in the removal of superfluous growth with the object of securing short-jointed, well-ripened shoots that will fruit the ensuing season. The Fig should not be grown in rich soil. When the plants are cropping freely they should be mulched with short manure in hot weather, and watered liberally with liquid manure.

SEQUOIA AND VARIEGATED YEW: *J. Williams.* The *Wellingtonia* (*Sequoia gigantea*) attains a height of about 300 feet in its native habitat of Western North America. One of the largest trees measured by the United States Government was 325 feet in height and 45 feet in circumference at 10 feet from the ground. The largest trees in this country are about 80 feet to 100 feet high, and it is doubtful if they will ever reach more than 150 feet here. We should advise you to have your tree accurately measured, as the height seems too great in proportion to the girth for a *Wellingtonia*. The variegated forms of the Common Yew are usually grafted, as those worked make better specimens than those on their own roots raised from cuttings. The variegated forms of the Irish Yew, however, grow freely on their own roots, and need not be grafted.

TULIPS FAILING TO FLOWER: *An Old Subscriber, Cottingham.* There is no disease present in the bulbs. The reason why they have failed to flower is that they were not well ripened the previous season.

WALLFLOWERS: *H. W. B.* Sow the seed in the first week of June, in an open position, and transplant the seedlings as soon as they are large enough for transference. Make the rows one foot apart, and set the plants 9 inches apart in the row. Do not pinch the tops of seedling Wallflowers.

Communications Received.—*F. D. A.*—*F. G.*—*W. T. J. R.*—*J. W. F. R.*—*E. W.*—*Constant Reader*—*S. W.*—*Sir A. B. H.*—*F. A. E.*—*W. E.* and *T. C.*—*W. S.*—*E. F. H.*—*H. A. C.*—*E. H.*—*W. F. R.*—*Sir H. V.*—*Sir D. M.*—*Sir E. G. L.*—*H. J. W.*—*W. E. B.*—*H. F. McML.* Ceylon—*Miss B.*



THE

Gardeners' Chronicle

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PENTSTEMONS: THEIR VALUE IN THE GARDEN.

OF late years there has been a very decided tendency, in ornamental gardening, to break away from the conventional lines. Fashions in flowers change, as in other things. There are many people who tire of continually seeing the same kinds of flowering subjects in beds and borders year after year. This feeling is very natural, for however beautiful the plants may be the too frequent use of a few kinds begets monotony, and it is then that the introduction of a different type of plant and fresh style of bedding is pleasing to the eye. In this connection I strongly advocate the more extensive use of Pentstemons in the more important parts of the garden, as, by reason of their brilliance and beauty of colouring, combined with extreme grace of habit and growth, they are well worthy to enter into any scheme of planting, and to occupy the best position which can be accorded to them. Details of cultivation I have endeavoured to set down in a manner which may enable those unacquainted with the plants to succeed with them, the growing of Pentstemons being simpler than that of most subjects used for summer bedding. My attempt at describing the beauties of the plants I feel to be quite inadequate, as those who appreciate them and grow them well will agree.

DESCRIPTION OF THE PLANTS AND THEIR ORIGIN.

There are now a very large number of the hybrid varieties of Pentstemon, embracing shades of colour from white to deep crimson, scarlet, and purple, with many beautiful intermediate shades. A list of these varieties, together with a few of the species, is given at the end of this article, it being necessary here briefly to describe the habit and general appearance of the plants. The growth of the improved forms is very neat. They make slender but stiff, upright stems, the flowers being produced in the form of a panicle. The leaves are narrow, long and entire, very glossy and handsome, the stems well furnished with them to the ground. The normal height of the flower-stems is from 18 inches to 3 feet, vigorous and well-grown plants sometimes exceeding the latter figure. The flowers are very handsome, somewhat resembling Gloxinias, and are in many cases prettily marked or blotched. Brilliant as is the colouring of the flowers, there can never be said to be anything approaching gaudiness about them, the brightest and strongest colours being in every case toned down by the white or paler colour in the "throat" of the tube-like corolla. Again, the graceful hanging of the flowers on their boldly upstanding stems prevents any appearance of stiffness, but it imparts extreme freedom and grace to the plants, and renders them of great value for associating with plants of a formal and compact habit of growth. The garden forms of Pentstemon have been derived by means of seedlings from several of the species, notably Pentstemon Hartwegii, P. Cobaea, and P. gentianoides, while several others may have entered into the process. There are several species which, in their natural and unimproved form, are very pretty and interesting plants, though not much grown. The species are in nearly every case perfectly hardy, their native homes being in North America and Mexico. They do not, of course, possess the showy characteristics of the hybrids. It is to the hardiness of the species that we owe the vigour of constitution of the garden forms, although, as in the case of most improved varieties, they do not retain their hardiness in the same degree as the parent species.

HOW AND WHERE TO USE THEM

As I have already said, I consider Pentstemons quite worthy of occupying a position in the best parts of the flower garden, instead of being used merely to fill odd nooks and corners, after the manner of those who do not realise the possibilities of the plants. When used in the latter fashion they are often planted in positions where their charms are not apparent, and they frequently become overgrown with more vigorous subjects. Their flowering period extends from about the end of June, throughout the entire summer and autumn, up to the advent of frost; in fact, the first frosts—which are sufficient to make the more tender of bedding plants present a bedraggled and forlorn appearance—seldom do them any harm, and I have seen them in mild seasons still gaily in bloom within a few weeks of Christmas. Therefore, I think that they may safely enter into any scheme of bedding, even if they do not flower quite so early as some subjects. It may also be stated here that they withstand heavy rains and wet seasons far better than the majority of flowers. This is owing to the fact that they delight in plenty of moisture while growing and flowering freely, and also that the tubular form of the flowers and their downward

direction are a protection against heavy rain. Whether they are used in mixed varieties or in groups is a matter of individual taste, and also depends upon the style of bedding and the other kinds of plants used. Generally speaking, I favour the planting of a bold mass of a single variety in a group: especially effective is this style of planting where a border is entirely devoted to them. In this case a very fine effect may be secured by graduating the colours of the groups, commencing with white and blush shades, and proceeding with stronger pinks and reds towards the intense scarlet, crimson, and purple tones, again working out to the paler colours. A border planted in such a way, and given proper attention (which is simple enough) will make as fine a show and attract as much admiration as any feature of the garden. An edging of dwarfier plants of another kind could, of course, be used, or, to make the border one entirely of Pentstemons, the variety Newbury Gem may very well be employed as an edging. This variety is excellent for the purpose, being of bushy habit, not much over a foot in height, and bearing rather small, bright red flowers in great profusion. If the plants are to be used in borders containing other plants, they should be planted where there is ample space to form large, bold groups, which is far more effective than a few plants dotted about. They are also of great value for planting as a groundwork, in large beds containing taller plants, as, for instance, tall standard Roses, provided that they are not crowded into places where they will have insufficient room to develop their panicles of bloom. If planted with Roses, they give a fine display, and render the beds attractive long after the Roses are past their best. In beds, also, where tender plants trained as standards or pillars in the style now popular are to be planted out for the summer, Pentstemons form an excellent groundwork, and may be used in this way, selecting the colours which will associate best with the other occupants of the various beds.

METHODS OF PROPAGATION.

Pentstemons are perennials, and if given protection from excessive wet and hard frost will live for years. As, however, this would entail some trouble, and cuttings root readily, the plants which have done a season's service are seldom kept. It is always the best plan to propagate the numbers required annually, and so obtain vigorous young plants. By means of cuttings, also, any particular variety may be rapidly increased, and the sorts are kept true. The best time to insert cuttings is during September, the earlier part of the month for preference. The ideal time, however, will vary a little, according to locality, and to the state of the weather. In very cold gardens they might with advantage be put in at the end of August, but in warm places they should be left until the latter part of September, or even later. The time of propagating is also affected by the supply of cuttings, as it is often found, when the operation is contemplated, that there are few shoots suitable for forming cuttings, in which case it is better to wait a while than to take the wrong sort of shoot. The cuttings should be rooted by the time the days are short and cold, so that they may keep healthy throughout the winter. Experience will soon show the best time in each locality, according to season. I have, in a warm district, and for one reason or another, been as late as the end of October before putting in cuttings, and obtained an excellent "strike."

THE KIND OF CUTTING TO SECURE.

It is well to give a little attention to the sort of shoot to take for cuttings, for although any growing part of the plant will strike—the growing tips not yet showing in flower being often used to make up the required number—to obtain an even batch of plants, the growths should be selected of fairly uniform size and strength. Towards the end of the season there will usually be found a good supply of strong side shoots from the main stem or stems bearing flowers. These growths would, of course, also produce flowers in time, if kept growing in proper conditions; some of the more advanced will, in fact, be showing flower. These should not be taken. The ideal cuttings are made from those of the side shoots which have not advanced too far in growth, of medium thickness, and not longer than 5 or 6 inches. These should be taken off for preparing later, taking care to keep them fresh meanwhile. The smallest of the shoots should not be taken unless there is a scarcity of cuttings, as I always find that fairly strong growths of about the length named make more vigorous plants than very small ones.

"MAKING" OR PREPARING THE CUTTINGS.

During this process keep the shoots quite fresh by damping them, especially if a considerable number has been taken off, also by keeping them from the air as much as possible. See that the knife is very sharp, in order to make a clean cut, without bruising the tissue. The length of the cuttings should be about 3 inches, the cut being made below and near a joint and straight across, the pair of leaves being removed from this joint, and also from the next joint above it, care being taken to cut them off clean and close to the stem, without injuring the outer tissue of the latter. Some growers in making the cuttings also remove part of the longer leaves which remain, but this is not of much importance, and if done at all the leaves should only be shortened slightly. *S. Ashmore.*

(To be continued.)

ORCHID NOTES AND CLEANINGS.

BRASSO-LAELIO-CATTLEYA FIGARO.

A THREE-FLOWERED inflorescence (a bouquet in itself) of this beautiful hybrid, raised between *Brasso-Laelia Jessopii* (*B. Digbyana* × *L. xanthina*) × *B.-C. Mrs. J. Leemann* (*B. Digbyana* × *C. Dowiana aurea*) is sent by Mr. H. G. Alexander, Orchid grower to Lieut.-Col. Sir Geo. L. Holford, K.C.V.O., C.I.E., Westonbirt, Tetbury, where the plant first flowered in 1915.

Yellow Orchids are much sought after, and it would be difficult to imagine anything more attractive than this plant. The flowers are large, of bright canary-yellow, and the expanded, fringed labellum has an almost invisible light rose veining in front. Moreover, the flowers are delicately fragrant. The sepals, which are 7 inches across, give strong indication of *Laelia xanthina* in their firm substance and clear yellow tint, the petals resembling those of *Cattleya Dowiana* and the lip retaining the form of *B.-C. Mrs. J. Leemann*. The varying tints of the yellow colour, with slight traces of other shades in the delicate veining, and the whole arrangement of the segments, all increase its attractiveness. It is a very good example of progressive crossing with a definite object in view. The object in this case was to procure a yellow flower with the good shape of *C. Dowiana* but to suppress the deep crimson-purple of its labellum.

SOPHRO-LAELIO-CATTLEYA XANTHINA.

This pretty yellow hybrid, between *Laelio-Cattleya Ophir* (*C. Dowiana* × *L. xanthina*) and *Sophrro-Laelia Psyche* (*S. grandiflora* × *L. cinnabarina*), shown by Messrs. Barry and Black at the meeting of the Royal Horticultural Society on

May 2, provides a similar instance of certain yellow-flowered species having the power to suppress the purple and red of other species when crossed with them. In this case the yellow of *Laelia xanthina* and the yellow sepals, petals and disc of the lip rule the colour of the whole flower of the hybrid, the purplish crimson of the lip of *C. Dowiana* and the scarlet tint of *S. grandiflora* and red of *L. cinnabarina* being entirely obliterated, only some almost invisible lines at the base of the lip of *S.-L.-C. xanthina* showing.

Points of interest would be to ascertain whether all the plants from this cross follow the same rule of colour, and, if not, to ascertain the nature of the variation. It has been shown in some cases that where yellow is present in



(Photograph by George Forrest.)

FIG. 106.—PRIMULA BLATTARIFORMIS IN THE LANG-KONG GORGE, NORTH-WEST YUNNAN, CHINA.

one cross, reverse crosses give rose and purple flowers. The seed-bearer should, therefore, be recorded when possible, so as to help in arriving at some rule for colour production in hybrids.

MEGACLINIUM.

MEGACLINIUM is a singular genus from Tropical Africa, closely allied to *Bulbophyllum*. The chief characteristic of the genus is the singular flat rachis of the inflorescence, which bears a single row of insect-like, brownish flowers on each side. *M. Bufo*, the type species, is probably not now in gardens. *M. falcatum* is the commonest species in cultivation, and *M. purpureo-rachis*, *M. triste*, and several other species are sometimes seen. The plants should be grown in a warm house in baskets or pans.

PRIMULA BLATTARIFORMIS.

THIS interesting and beautiful *Primula* was first found by the Abbé Delavay, some thirty years ago, on the Lang-kong mountains, N.W. Yunnan, China, at an altitude of 7,000ft.

In recent years it has been rediscovered and collected in other and more northern parts of the province, and at higher altitudes, from 8-10,000 feet. However, the species is most local in its distribution, and nowhere abundant. Of the many charming "Primroses" which adorn the meadows, thickets, and forests of those regions it is one of those least often seen. Possibly the habit of the plant may account for that, as it is a lover of dry shade, nestling in the most secluded situations of arid rock gutters on the mountain sides, closed in more or less by sheltering scrub, or under the shade of heavy boulders on the banks of mountain torrents. The plant illustrated in fig. 106 is growing in such a site on the mountains of the Lang-kong Gorge, the original habitat of the species. The foliage forms a fairly close rosette, and, in keeping with all other parts of the plant, is densely hirsute. The scapes are stout, and erect without stiffness; several may be produced by one plant; they are from 10-16 inches in height, bearing from 10-18 blooms. Those are of good size, 3in. to 1in. in diameter, and are fragrant, ranging in colour from a deep velvety rose-red to clear lilac-rose, with a yellow eye.

The distinctive feature of the species lies in the peculiar arrangement of the flowers on the scape. Instead of being capitate or whorled, as is usual in the sinensis group to which it belongs, the inflorescence is spicate or racemed, the blooms being produced only on one side, as seen in the figure. This peculiarity is known in only one other species, *Primula bathangensis*, a member of the same group. In this the flowers are larger and of a very rich deep orange hue. It is a taller and stouter plant, with bolder foliage, and more numerous blooms, affecting much the same habitat and altitude.

Both species are of great horticultural value. From its rich colouring *P. bathangensis* is the more decorative, though probably the less hardy. Seeds of both were secured in 1913-14, and Messrs. Wallace and Co., of Colchester, have been successful in raising plants. *George Forrest.*

VEGETABLE GARDEN.

CELERY.

UNFORTUNATELY many varieties of Celery are practically worthless, and it is important to obtain seed of best stocks from a reliable seedsmen. The seed for the main crops should not be sown too early, and the greatest care should be exercised in guarding against the plants becoming dry at the roots. In my opinion, unnecessary expense is incurred in digging deep trenches for Celery which it is intended to use up to the middle or end of November. These plants should be grown on flat beds, with some six to eight rows in each, and fed copiously with liquid manure, and given plenty of clear water. It is a good plan to place 3-inch battings around the edge of the bed to prevent waste of water. Grown in this way, the Celery can be successfully blanched by means of strips of rough brown paper, which need not be new.

For late supplies it is better to grow the plants in trenches, planting two or three rows in each trench, as a bank of soil about the stems is necessary to prevent frost damaging the plants. The longer the blanching is delayed for the latest supplies the better. White and pink varieties are best for early use, and a good red sort for late supplies, as red Celery is the hardiest. *Edwin Beckett.*

MEGACARPAEA POLYANDRA.

THE photograph reproduced in fig. 107 was taken in the garden of Mr. G. H. Wollaston, Flaxley Cottage, Flax Bourton, Somerset. The inflorescence, which is two feet high, bears numerous greenish-white or cream-coloured flowers, the unexpanded buds being tinged with purple. The stem of the inflorescence is yellowish-green and strongly ribbed, and the stout lateral branches spring from the axils of leafy bracts. The flowers have several petals and a varying number of stamens, and are very unlike those of a typical Crucifer. An analysis of the flower, and a drawing of the large winged seed vessels, is shown in fig. 108. In fig. 107 three of the large Acanthus-like leaves are seen arising from the root stock on the left of the photograph. The leaves are of a bronze-green colour, herbaceous in texture, and do not remain in good condition for a very long period.

The plant figured, which is a native of the Himalaya, was given to Mr. Wollaston by the late Canon Ellacombe in 1908. It never flowered at Bitton, and this inflorescence is the first that has been produced by the plant.

THE MARKET FRUIT GARDEN.

APRIL began well, with warm and sunny weather, but soon became cold, while a rainy period prevailed from the 11th to the 22nd inclusive. There was hardly any growing weather, as the wind was cold from every quarter but the south, whence it blew in half the last week of the month, giving us a short spell of quite warm weather. As usual, however, a north-easter came to greet the opening Apple blossom, and at the end of the month such crops as early Peas had a weak and starved appearance, while seeds of the Cabbage tribe, Onions, Leeks, Parsnips, and Beet were very slow in coming up and in making headway after appearing. Rain fell at my place on twelve days, making a total of 1.48 inch.

FINISHING WINTER SPRAYING.

This work, which had been in progress for four weeks, when the weather allowed, was stopped after April 20, as warm lime-wash had begun to scorch the young leaves, then showing on most Apples. Cold wash, with which the work was finished, did not scorch; but I cannot believe that it is not harmful to coat the foliage over with lime, besides which I was sick of the tedious operation. Where any considerable acreage of orchards has to be sprayed with lime-wash, steam or oil engine power is the only tolerable one, for either with hand power or pneumatic action, it takes longer to fill a spraying machine than to empty it, freely as lime-wash is applied. This is the case even with the battery system, which I used, as two men pumping could not keep two spraying without any waiting. In the case of lime-sulphur, which does not need to be applied as profusely as lime-wash, the pneumatic machines, with or without the battery arrangement, are much more satisfactory, while they are even more so still for the fine spraying done in the summer. For my own part, however, my experience has so thoroughly convinced me that spraying against the aphid or the Apple sucker is waste of time and money that I shall do no summer spraying except on varieties of Apples subject to scab, or against a bad infestation of caterpillars, which seldom gets beyond the capability of my extremely numerous feathered friends—particularly chaffinches, linnets, tits, and sparrows—to deal with. The codlin moth, it may be explained, does not infest my orchards.

FURTHER LIME-WASH EXPERIMENTS.

In addition to the trials of numerous materials with lime, as possible helps to enable that mate-

rial to stick well on the trees, previously described in these columns, silica and paraffin were tried. The quantity of silica was 7 lb., with 90 lb. of lime to 40 gallons of water. The silica failed to increase the sticking power of the lime. Indeed, it seemed to render the deposit more powdery. The quantity of paraffin was one gallon to 40 gallons of lime-wash, the quantity of lime being reduced to 75 lb., as this appeared to be ample. Several tests were made with this mixture, some of which were in favour of the addition of the paraffin, while in others lime alone appeared to have stuck on the trees equally well. On the whole, paraffin stands out as the only material tried which seems to have increased the sticking power of the lime. Probably two gallons, or even more, in the forty would have been better than one; but this addition would have increased the cost of the wash considerably, and it is doubtful whether the result would have justified the outlay. Another trial in several places was with cold lime-wash against warm. There was no decided difference in the



FIG. 107.—MEGACARPAEA POLYANDRA.

results; but, if any, it was in favour of the cold wash, which surprised me. It can hardly be supposed, however, that the cold wash is as effective as the more caustic warm wash in destroying moss or lichen on the trunks and branches of the trees.

THE SETTING OF PLUMS.

So far as can be decided at present, Plum blossom seems to be setting well. It is much too soon, however, to ascertain whether there will be a good setting. In the first place, we are not yet out of the danger of frost sufficiently severe to do great damage; while, apart from this risk, there is often a very extensive dropping of fruitlets long after the fall of the blossom, from lack of pollination or other causes. When the earliest blossom was full, insects were not numerous among the trees, the weather being wet or very cold. Later, humble bees were very numerous and active on sunny days, with limited numbers of other wild bees and some queen wasps. The dates of full blossoming were April 5 for Black Diamond, 6 for Monarch, 15

for Early Rivers, Old Greengage and Coe's Golden Drop, 20 for President, 21 for Czar, 22 for Victoria, 23 for Pond's Seedling, and 30 for Gisborne. The blossom was profuse on Early Rivers and Monarch, enormously so on Czar, and abundant enough on the other varieties named, Belle de Louvain, four years from the planting, being the only variety to fail, and that completely.

NOT A GREAT APPLE YEAR.

So far as I have seen and heard, there is no possibility of a great Apple crop, and it is doubtful whether there can be an average one. Several varieties which bore thick crops of fruit more or less spoilt by the aphid last season are almost entirely devoid of blossom, and many others have flowered only partially. Lane's Prince Albert is a striking example of failure, mature trees as well as young ones being practically without blossom. In other cases, while mature trees are blooming fully or fairly, those of the same varieties planted six to nine years ago are nearly bare. As a rule, early varieties are the most promising in my orchards. Beauty of Bath is in full and profuse bloom at the time of writing, and Early Julyan, Domino and those Golden Spire trees which did not bear last year are making a very good show. Mr. Gladstone and Duchess of Oldenburg, however, are early varieties, blossoming only partially, young trees making no display worth notice, and Lady Sudeley has scarce a flower. Among mid-season varieties Warner's King is the most striking example of free blossoming, trees of all ages, from nine to fifteen years from the planting, being full of bloom. Where Lord Grosvenors failed last year, they are very well covered, while those which bore then are taking a rest. Among Allington Pippins, only mature trees which failed last season are now promising well, those planted nine years or less being almost entirely blossomless. Cox's Orange Pippins, planted nine to fifteen years ago, make a fairly good display on the whole, while younger trees have practically no bloom. Charles Ross had a great crop last year, but will be a partial failure this season. Bismarck, one of the most inveterate of alternate year croppers, is splendid where it failed in 1915, and blossomless where it fruited then. Mature Worcester Pearmain make a fair, but partial, show, while young trees have no blossom worth notice. Blenheim Pippin is blooming partially. James Grieses are the only young trees which promise well for their age. Lord Derby is well up to the mark, and all but the youngest of Bramley's Seedlings are promising. Dumelow's Seedling, which bore fully last season, has no blossom at all. Royal Jubilee will blossom well partially. The common failure of young trees to blossom may be attributed mainly to the great severity of the aphid attack last season, from which they suffered much more than mature trees.

DATES OF APPLE BLOSSOMING.

Taking a mature orchard as the example, the dates of full blossoming, so far as can be stated at the time of writing, are as follows:—April 30, Bismarck and Golden Spire; May 1, Beauty of Bath, Warner's King, and Duchess of Oldenburg; May 2, Lord Grosvenor, Early Julyan and Bramley's Seedling; May 4, Cox's Orange Pippin, Charles Ross and James Grieve; May 5, Allington Pippin and Domino.

APHIS ATTACK ON PLUMS.

A general attack of the leaf-curling Plum aphid began with May, although not a single egg had been found on the trees in several searches made during the winter and spring. It will be left to take its course, spraying to kill insects in curled leaves being almost entirely useless.

NO APPLE APHIS ATTACK AT PRESENT.

Up to the time of writing less than half a dozen aphides have been found on Apples,

although numerous examinations of several varieties have been made. The immunity, so far, has no connection with lime spraying, as trees left unsprayed are as free from the pest as the others. There is the usual infestation of Apple suckers, which will be left to do their worst, great expenditure of time and money in previous seasons having failed to check them materially. My experience, including numerous experiments with labelled trusses of fruitlets, has convinced me that the injury attributed to the sucker has been much exaggerated. *Southern Grower*.

is also important that they do not become pot-bound before growth is complete. The final potting should be in 8 or 10-inch pots, and the plants should be outside on a cool ash bottom. They must be housed in the autumn in a cold frame or greenhouse, merely excluding frost, and giving plenty of air on all favourable occasions. When they begin to throw up their flower-spikes a little weak manure water may be given twice a week. Insect pests do not trouble them a great deal, owing to the foliage being of a coarse nature, although mildew sometimes makes an

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

CATTLEYA.—Many of the plants belonging to the autumn and winter section of *Cattleya* are rooting freely, and should be repotted if necessary before the roots are far advanced. Osmunda or A 1 fibre forms a suitable rooting medium, to which may be added a sprinkling of crushed crocks. Over-potting must be guarded against, and each pot should be filled to one-third of its depth with drainage material. The fibre should be made firm about the roots, and not raised above the rim of the receptacle. For a week or two little direct watering will be needed, but the surroundings must be kept moist by occasionally syringing between the pots. Light spraying overhead will prevent the pseudo-bulbs from shrivelling and will encourage root action. Until the roots are re-established a little extra shade will be necessary. Certain of the summer-flowering *Cattleyas*, *Laelio-Cattleyas*, and their allies, are pushing up their flower-scapes, and each spike should be neatly tied to a thin stake. Plants that produce a thick, fleshy sheath should be watched, an accumulation of moisture sometimes causing the buds to decay. Directly the top of the sheath is detected it may be cut off immediately above the buds, or it may be split open from the base upwards. Hybrids from *Brassavola Digbyana* require more sunlight than *Cattleyas*, but it will be necessary to shade them for several hours each day whenever the weather is bright. *Cattleya aurea*, *C. Dowiana* and *C. gigas* should now be suspended from the rafters, or given some other light position near the roof-glass. Water must be afforded sparingly until roots are seen at the base of the current season's pseudo-bulb. At this stage re-potting may be carried out. If grown in dense shade, the *Cattleyas* under notice fail to bloom with any regularity, and the flowers are poor in quality.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

PRIMULA SINENSIS.—Another sowing of Chinese *Primulas* may be made now. Fill a quantity of shallow pans with finely sifted compost composed of loam, leaf-mould and sand. Sow the seeds thinly and cover them lightly with very fine soil; water the soil with a fine rose can and germinate the seeds in a warm house; keep the pans shaded until the seedlings are through the soil.

CINERARIA.—Make a sowing of this useful plant in pans or boxes filled with a light compost. The seeds will germinate freely in a cool house; during all stages of growth the plants must be kept in cool conditions. Varieties of the stellata type are much more effective for ordinary decorative purposes than those of the large-flowered or florists' type. Another sowing may be made next month to obtain plants for late flowering.

ACALYPHA.—A batch of cuttings of this interesting plant may be inserted now. If grown in a warm, moist house they will make useful plants by the end of the summer. Pot them on before they become pot-bound in a compost consisting of loam, leaf-mould, manure from a spent Mushroom-bed, and coarse sand. Admit plenty of air in the forenoon, but close the house early in the afternoon after syringing. The plants should only be shaded for an hour or two during the hottest part of the day, unless they have been recently potted, when more shade will be necessary.

HIPPEASTRUM (AMARYLLIS).—Plants of *Hippeastrum* which have finished flowering should be afforded such treatment as will assist them to mature their growth. Place them in a light position in a warm, moist house and syringe them vigorously with rain-



FIG. 108. *MEGACARPEA POLYANDRA*: WINGED SEED VESSELS AND FLORAL DETAILS.

(See p. 255.)

CELSIA CRETICA.

Pot plants of this hardy biennial with their long spikes of yellow blossom are very effective if arranged with Ferns, Palms, *Richardias*, *Schizanthus*, and similar plants. Seedlings should be raised at the present time in mild heat. If grown afterwards in cool conditions, they will make excellent specimens for flowering next spring. A compost consisting of three parts loam, leaf-mould and sand, with a little rotten manure added, suits them well. Care must be taken to keep the mixture open, as the plants require a liberal supply of water during the summer months; it

appearance. Should this be so, an early spraying with a good specific should be given. We have here at present about two dozen specimens, full of flower, from 6 to 8 feet high. They make a very charming effect. *Jas. Kerrs, The Coppice Gardens, Sanderstead.*

TRIAL OF MYOSOTIS.—The Royal Horticultural Society will carry out a trial of *Myosotis* in the Wisley Gardens, Ripley, Surrey, next spring. Seed to be tried should reach the Director of the Gardens, from whom the necessary entry forms may be obtained, not later than Monday, June 5, 1916.

water twice daily. The roots need plenty of water, and this should be supplemented occasionally with liquid manure and soot-water; when growth is completed discontinue feeding and withhold water gradually. The plants may be exposed to full sunshine.

BROWALLIA SPECIOSA MAJOR.—Seeds of this useful annual sown now will furnish plants for flowering during the late summer and autumn. Pot the seedlings in 3-inch pots and later into 5-inch pots for flowering. Grow the plants in a light, airy house and stop the shoots as becomes necessary, to obtain a bushy habit.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

MORELLO CHERRIES.—These trees are blooming profusely, and if the weather is favourable there will be every prospect of a heavy crop. After the fruit is set, growth is very rapid, and disbudding and stopping the shoots must be attended to as required. If disbudding is neglected in the spring the trees quickly become a dense mass of shoots, which renders the task of keeping them clear of insect pests unnecessarily difficult. Do not disbud too severely. When training the shoots, if it is found that too many have been left, the superfluous ones should be pinched back to the third or fourth leaf. These will eventually form fruiting spurs. On the first appearance of aphids the trees should be sprayed with a solution of quassia and soft soap, afterwards washing the trees thoroughly with clear water.

GOOSEBERRIES.—Gooseberry bushes are looking very promising, and since the advent of warm weather the berries are commencing to swell. When well cultivated, Gooseberries are a most profitable crop, being amongst the first fruits of the season. Small fruit bushes cannot be expected to carry heavy crops year after year without manurial assistance. If the bushes were not given manure in the winter, a dressing of fish-manure, or other quickly acting soil fertiliser, should be given now. Wood-ash, lime, and light soil should be mixed with the manure, which should be applied during showery weather, the whole being forked lightly into the surface. The first thinning can be given when the fruits are about the size of Peas.

OUT-DOOR VINES.—These should be disbudded at an early stage, reducing the buds to two or three on each spur. After a short period of growth it will be an easy matter to see which shoot carries the best bunch, and to remove those not required to furnish the wall space. The chief pests affecting outdoor vines in this country are mildew and red spider. The former generally shows itself during a protracted cold, wet period, and should be combated with a good mildew specific as soon as detected. Syringe the vines with the solution early in the evening, repeating the application in a day or two if the pest is not totally destroyed. Red spider usually occurs during a spell of hot, dry weather, but can be kept in check by syringing regularly with clear water. This should be done in the afternoon during bright weather, taking care that the foliage is thoroughly wetted underneath. As the growths elongate they should be stopped according to the wall space to be furnished. Avoid crowding, which is fatal to the production of good Grapes; it is impossible to succeed with outdoor Grapes unless the shoots and foliage are kept sufficiently thin to allow the sun and air to penetrate to all parts of the vine. As a general rule, if space allows, stop the growth two leaves beyond the bunch and pinch out all lateral growth as it appears.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major Hoare, Ellisfield Manor, Basingstoke, Hampshire.

FLOWERS FROM SEED.—Several plants which are usually treated as biennials may be sown now or very shortly. They include *Aquilegia*, *Foxglove*, *Honesty*, *Alyssum saxatile* and *A. argenteum*. A sowing may also be made of *Polyanthus*, *Tree Lupin*, and *Aubrietia*. *Tree Lupins* raised from seed sown now will flower next year. These plants need to be renewed every

few years. It is a good plan to save and sow a few seeds each year for the purpose. *Aubrietias* from seed cannot be expected to come true to name, but they come in useful for many purposes. Should no seed have been saved last year, it will not be long before the plants now flowering furnish a supply. The new seed should be sown in a box in a cold frame, and the seedlings afterwards pricked off in a bed of fine, sandy soil; they will make good flowering plants for next season.

TUBS AND VASES.—An attractive tub of plants is formed by planting three or four tall Ivy-leaved *Pelargoniums* in the centre and filling the outside with smaller plants from pots for trailing over the sides. *Heliotropes*, *Fuchsias* and *Zonal Pelargoniums* may be used in a similar manner. For permanent stone vases on balustrading it is usual to have other pots that fit them furnished in advance of the usual planting season. *Marguerites* and *Zonal Pelargoniums* are particularly well adapted for these vases, and the effect is better if some trailing plant is associated with them.

PLANTING DAHLIAS.—If the old tubers were not started in heat they may be planted with safety now in the open. Old tubers will make large plants if they have been carefully stored. If necessary the roots may be soaked for a few hours in a tub of water. In planting make deep holes and mix well-rotted manure with the soil below. Plant at a distance of 5 feet apart. Dahlias should prove especially valuable this year of economies, as they fill large spaces and give very little trouble. If desired the shoots may be spread out and pegged to the ground instead of staking them. Young plants raised from cuttings are growing freely, and although they need protection from frost the lights of the cold frame should be removed on all favourable occasions. Shift them into slightly larger pots and have them well rooted at planting-time.

MAY FROSTS.—Let bedding plants that will be planted out of doors at the end of the present month have as much open treatment as possible, but watch carefully for signs of frost at night, so that the plants may be suitably protected; late in the evening one may gain a fair idea as to whether frost is likely to occur. A small covering will suffice, as usually frost at this season only lasts for an hour or two. The tenderest plants, such as *Heliotrope*, must still have a little protection at night until all danger from frost is past, but others may be fully exposed except on very cold and frosty nights.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady Nunburnholme, Warton Priory, Yorkshire.

SUCCESSIONAL PINES.—Endeavour to get these plants well forward, in order that they may have an abundance of time for ripening and resting. Use fire heat as little as possible, and close the pit early to give the plants the full benefit of the atmospheric moisture arising from the freshly damped floors and beds. Admit a little air when the temperature reaches 75°, and gradually increase the amount until the maximum is afforded at 85°. Towards the end of the present month admit a liberal amount of fresh air throughout the early part of the day, and have more atmospheric moisture. Water the roots with warm liquid manure and use guano for feeding more frequently. Light shading will be necessary during the brightest part of the day. The earliest suckers should be repotted before they become pot-bound.

VINERY.—Grapes in the early houses are beginning to colour, and the bunches should be examined for the last time with a view to removing a few berries where they are still too numerous, and there may be a few stoneless ones that have been overlooked. The stronger laterals may still be pinched, but, unless the main leaves are likely to become crowded, moderate-sized laterals should not be shortened. Feed the roots liberally with liquid manure, diluted to a suitable strength, at a temperature of 80°; also damp the house with liquid manure, taking care not to use it at full strength. If the vines are heavily cropped and there is a doubt of the berries finishing properly, reduce the night temperature to 60°, and admit a little

air; also let there be free ventilation during the early part of the day. The principal work in later houses includes thinning the bunches, tying the shoots, stopping the leading laterals, and removing a few more berries in the more advanced bunches. Medium-size bunches should be retained in preference to large ones with heavy shoulders in the case of such varieties as *Gros Colmar*, intended for late keeping; the larger bunches will be more trouble to finish, and they will not keep so well. Late Grapes are, as a rule, under-thinned, for the large size to which the berries of *Gros Colmar* attain is not always taken into account. When the berries are swelling give the roots copious supplies of diluted liquid manure and guano-water, but when the Grapes commence to colour use clear water only. Ventilation, as in the earlier houses, should be liberal up to 1 o'clock, reducing the amount of air gradually and closing the house in time to secure a rise of temperature to 85° on fine afternoons. Muscat varieties in the general vinery require a slightly higher temperature from fire and solar heat than other varieties, but admit air freely in fine weather. As these Grapes will hang on the vines until Christmas, crop the plants with medium-sized bunches and let the berries be well thinned. When thinning is over and the berries are swelling freely, laterals which have been allowed to grow should be pinched, tied and regulated, to ensure an even spread of foliage. Promote atmospheric moisture and use stimulants at the roots liberally, especially in favourable weather. These Grapes should never be syringed after they have set, as the least deposit or speck mars their appearance when ripe.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. Lord North, Wroxton Abbey, Banbury, Oxfordshire.

DWARF BEANS.—Make a sowing of Dwarf Beans in double rows made 9 inches apart. Sow sufficient seeds to allow for losses, thinning the plants eventually to at least 9 inches apart. Where a constant supply of French Beans is required, sowings may be made fortnightly. Choose varieties of the large, strong-growing type: the golden-podded varieties are eaten whole, and these may be sown now.

BEET.—Make a sowing of main crop Beet to obtain roots for storing during the winter. Sow the seeds in drills made 15 inches apart, placing one or two in groups, which should not be closer to each other than 1 foot. The seedlings should be thinned to one in each group, but do not select the strongest specimens, as they are more likely to grow coarse and deformed. Sutton's Black is a suitable variety.

SEAKALE BEET.—This vegetable makes a useful change to the ordinary vegetable crops, and may be planted as a substitute for both Seakale and Spinach. The midribs are cooked in the same manner as Seakale, and the remaining portion as Spinach. The plant thrives in any soil, and drought has little effect on it. Very large specimens may be grown in rich ground. Sow the seeds in groups, 15 inches apart, in drills made 18 inches asunder. Thin the seedlings to one seedling in each group.

PEAS.—Make a successional sowing of Peas in deeply cultivated land. Quite Content, or a similar variety, may be sown simultaneously with Gladstone or Rearguard. The two last varieties withstand drought and mildew well. In gardens where mildew causes trouble in late summer one of these two late varieties only should be sown at intervals to provide a succession.

TURNIPS AND KOHL RABI.—Make successional sowings of these vegetables, following the directions given on p. 197. Frequent dustings of soot or some distasteful substance will serve to keep the turnip beetle in check.

GENERAL REMARKS.—Thin Parsnips, early Carrots, Beet and Spinach before the seedlings become weak and attenuated. Keep the soil in which seedlings are growing constantly stirred with the hoe. Take measures for protecting tender crops whenever it is necessary. Potatoes that are not far advanced may be protected from frost by a little soil drawn over the haulm with a hoe.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher. — Our Correspondents would oblige by delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on ONE SIDE ONLY OF THE PAPER, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Special Notice to Correspondents. — The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MAY 16—

Royal Hort. Soc. Coms. meet. (Lecture at 3 p.m.)

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 51.5°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, May 11 (10 a.m.); Bar. 29.7°; temp. 59.0°. Weather—Dull.

Daffodils
in 1916.

The Birmingham Show brings another Daffodil season, which in some ways has been an unusual one, towards its conclusion. The warm January brought out the early flowers in good time, and had caused considerable development in the mid-season and later varieties, but the opening of the latter was suddenly checked by the cold spell that began towards the close of February and lasted through the greater part of March. During this cold period little apparent progress was made, and only the really early Daffodils, such as Tenby, Alice Knights, Henry Irving, and Golden Spur, did much to brighten the garden in the intervals between the blizzards, but the flower-stalks of the others had been developing, and so soon as the severity of the weather became mitigated out they all came together. This, though it may have been convenient for the exhibitor, has made the Daffodil season somewhat shorter than usual in the garden display. At the latter end of the season also the hot sun of the last week in April caused some even of the later varieties to fade, or at least to pass their best rather rapidly.

For the purpose of gathering either for exhibition or the house the flowers have generally been good and clean, a factor which has doubtless contributed to the success of both the London and Midland shows. The London show was in some respects better than any that have preceded it. Exhibitors in the competitive classes were relieved to find they were allowed to arrange their flowers against a background of quiet green cloth instead of the uncomfortable and trying white paper of former years, and the quality of the flowers staged

was very good, particularly in the classes for new Daffodils. The show is still confined to specialists, and hitherto has quite failed to attract the small growers, without whom it cannot hope to become popular; and probably it will continue thus until the classes are rearranged to suit popular requirements, and the exhibitors themselves are given a voice in the preparation of the schedule, and the arrangements for judging. Any move in this direction can hardly be expected during war time, but it may be hoped that the conclusion of peace, when it comes, may be accompanied by a change of procedure.

Among the new flowers, Golden Model, a rich orange-yellow Daffodil of the Buttercup type, looked very well, and Carmenta, a cream-coloured flower with a much expanded cup, Queen of Beauty, with a very white perianth and canary-yellow coloured trumpet, and Nysa, like a big Cresset, with a brightly-coloured cup, attracted notice. Some lovely white flowers were shown in Keziah, almost snow white, White Wax and Maiden White, two white trumpets, and, whitest of all, a charming Daffodil called Alpine Snow. Mrs. Horace Wright, which also made its appearance a fortnight later at Birmingham, is a large flower with a white perianth, a flat canary-coloured cup, and a green eye.

In the middle of their large and attractive group Messrs. Barr had placed a curious flower, which excited some discussion and division of opinion as to its merits. It was called Pink Beauty, and was of trumpet form with a pale perianth and a cup of pinkish-buff colour, reminding one somewhat of Apricot, but of rather larger size and pinker trumpet. It was undoubtedly very distinct, but whether it was beautiful or not was another matter. Perhaps it pleased more better the second time it was looked at than it did the first, and it may prove a starting point for something fresh, but it would be unlikely to produce any great effect in the garden.

Other good flowers in this group were Catalina, a Triandrus hybrid of Leedsii shape and character; Nannie Nann, an Incomparabilis with a bright cup; Tamora, a white trumpet with a frilled cup; and Silvia, a Triandrus hybrid.

Mr. Bourne had set up his group, which was, as usual, tastefully arranged, against a background of pale grey silk. In the bright light at Vincent Square this was a little trying to his flowers, but at Birmingham, where he had been given rather a dark corner, he used the same device with a decidedly pleasing result. He had some beautiful flowers in Little Joan, a small but perfectly formed Leedsii, Black Prince, a poetical variety with a dark eye; and Maid Monica, a white flower of great refinement and charm.

Daffodil shows at present are in the stage in which Rose shows stood before the rise of the decorative Rose, and its artistic treatment in classes where the heavy exhibition blooms are barred. The late Mr. Sydenham was beginning to attempt something more attractive and artistic by establishing classes for arrangements of Daffodils, table decorations, and similar

exhibits, but he probably failed to obtain very suitable or sympathetic judges, for they were overheard on one occasion to proceed to their task with the exclamation, "Now for the rubbish!" Over-concentration on purely specimen flowers is usually apt to become monotonous even for those in search of beauty, and there were not a few even this year who turned from the severity of these specimens with something of relief to the fine mass of King Alfred grouped by Messrs. Carter and Co. Though King Alfred is too capricious to be likely to make a good group in many gardens, we now have a flower in Sir Francis Drake which is nearly as effective out-of-doors, and decidedly more accommodating in growth and freedom of flower. At Birmingham one can expect to find some of this colour effect with fair confidence as a result of the grouping of the classes. A class that is always effective in this respect is that for six varieties of self-yellow trumpet Daffodils. This year Mr. Bourne's winning stand in this class was particularly well chosen for the harmony of its colouring. The depth of colour was not, perhaps, so great as in Mr. Chapman's memorable deep orange group staged in this class last year, but the group was extremely effective and of a brighter yellow. It included some well-grown flowers of The Doctor, Golden Idol (a fine form), and Cleopatra. Mr. Mallender staged a good flower called The Colonel in this class.

In the white trumpet section few flowers looked better than White Emperor and Treasure Trove, though Princess (which resembles the last-named, but has a better frill to its trumpet) was also beautiful. Sybil Foster appeared frequently, but is a coarse flower. A comparison of this group with the bi-color trumpets makes one feel that the distinction between the two groups is rather artificial, and raises the question whether the trumpets should not be divided like the Incomparables and Barriis merely into yellow backs and white backs. If not, a revision of the class varieties seems called for. Thus, the three lovely flowers—Florence Pearson, Olympia alba and Vestal Virgin—staged by Mr. Jacob in his winning group of bi-colors, might with equal propriety have taken a place among the white trumpets, while Mr. Cranfield's fine flowers of Caber, shown in the white class, would have looked more appropriate in the bi-colors. In the other open classes may be noticed Mr. Jacob's white-backed Incomparables, Bernardino, White-well and Lady Moore, and his Leedsii Thora and Nana. Mr. Chapman's white-backed Barrii Crimson Braid, with a deep picotee edge of crimson round the cup, Torso and James Douglas were all very bright flowers. Mr. Bourne's Seville, Dosoris and his Leedsii Queen of the North, Maid Monica, Adrian and Peregrine are worth noting for trial when the price of the bulbs becomes moderate, and Mr. Wilson's winning stand of poetical Daffodils was remarkable for the colour and width of the cups. It included Alpha, Madrigal and Bridget, all of them good

flowers; while Mr. Chapman's stand had very fine blooms of Socrates and Kestrel, now fairly well known. One of the best of the poet forms at Birmingham was Messrs. Barr's Caedmon, an upstanding bloom with a particularly clear eye surrounded by a brilliant red rim, and among the wealth of flowers they displayed was a particularly refined flower, St. Hya, with a trace of pink in the cup, and St. Senava of the Leedsii type, while Gladiator was a fine bold flower.

Of the new Daffodils, many were exhibited under numbers only. Mr. Adams showed two beautiful flowers in Apricot Modesty and Ruby Gem, which might be termed an improved Joan of Arc. Dr. Lower had a bright flower in Fireball and a fine one in Harpagon. Mr. Hawker showed a very round flower in Discus, with a cool green centre, and Idris, a hooded yellow-cupped form, while Audrey, showed by Mr. Robinson, was distinct, having a whitish perianth and pinkish frill to the cup, and there were many others almost equally worth notice.

One of the interesting points about a Daffodil show is the indication it gives of the line of future development. At recent exhibitions the pose of the head of the new flowers was often criticised, and it is doubtless a matter of great importance, especially in considering the garden value of a flower.

IMPORTATION OF PLANTS, TREES AND SHRUBS PROHIBITED.—By an Order in Council, signed by the King on the 10th inst., the importation into the United Kingdom of bulbs, flower roots, plants, trees and shrubs is prohibited, except under license from the Board of Trade.

JUMBLE SALE IN AID OF AGRICULTURAL RELIEF OF ALLIES FUND.—The Royal Agricultural Society has arranged that in connection with the Royal Show at Manchester on June 27 there shall be a "jumble" or gift sale for the benefit of the Agricultural Relief of Allies Fund. The announcement was made recently by the DUKE OF PORTLAND, president of the fund, at a meeting of the executive committee.

THE KEW GUILD.—The annual general meeting of the Guild will be held in the Lecture Hall, Chelsea Physic Gardens, on Wednesday, May 24, at 6 p.m. The hall is within five minutes' walk of the Chelsea Show grounds. Tea and coffee will be provided from 5.30 p.m. Members who intend to be present are requested to inform the Secretary, 191, Kew Road, Richmond, Surrey, before May 20. The committee has decided that the usual annual dinner shall not take place this year.

THE HORTICULTURAL TRADE AND THE BRITISH RED CROSS SOCIETY.—A strong committee has been nominated with the object of making an appeal to the fruit, flower, vegetable and allied trades, including market growers and wholesale and retail traders of the British Empire, for funds for the British Red Cross Society. A general meeting is to take place at the Tavistock Hotel, Covent Garden, London, on Tuesday, May 16, at 12 o'clock. The president, GEO. MOXRO, Esq., will be in the chair, supported by Sir CHARLES RUSSELL, chairman of the Collection Committee for the Red Cross Society, and other gentlemen. The appeal has been launched in the confidence that the trade will uphold its old tradition of charity. No

appeal can be more urgent than that of the Red Cross and Order of St. John, which succours the brave men who are fighting our battles at the front. Anyone who is desirous of supporting this fund is requested to send a cheque to the treasurer, F. R. RIDLEY, or secretary, H. BAKER, 4, Tavistock Street, Covent Garden, W.C.

THE LATE MR. GURNEY FOWLER.—At a meeting of the Council of the Royal Horticultural Society on Tuesday, May 2, before proceeding to the business of the day, the President, the Rt. Hon. the Lord GRENFELL, F.M., referred with deep feeling to the death of the treasurer,

that every committee of the society meeting that day had passed similar resolutions, notably the Orchid Committee, of which Mr. FOWLER had long occupied the chair. The resolutions of condolence were forwarded to Miss FOWLER, sister of the late Mr. GURNEY FOWLER.

FRENCH SOLDIERS TO BE TRAINED IN GARDENING.—The National School of Horticulture at Versailles has completed a comprehensive scheme for the training as gardeners soldiers discharged as disabled from the French Army. Candidates are required to satisfy the authorities that they have the full, or nearly full, use of both arms, that they have already had some previous

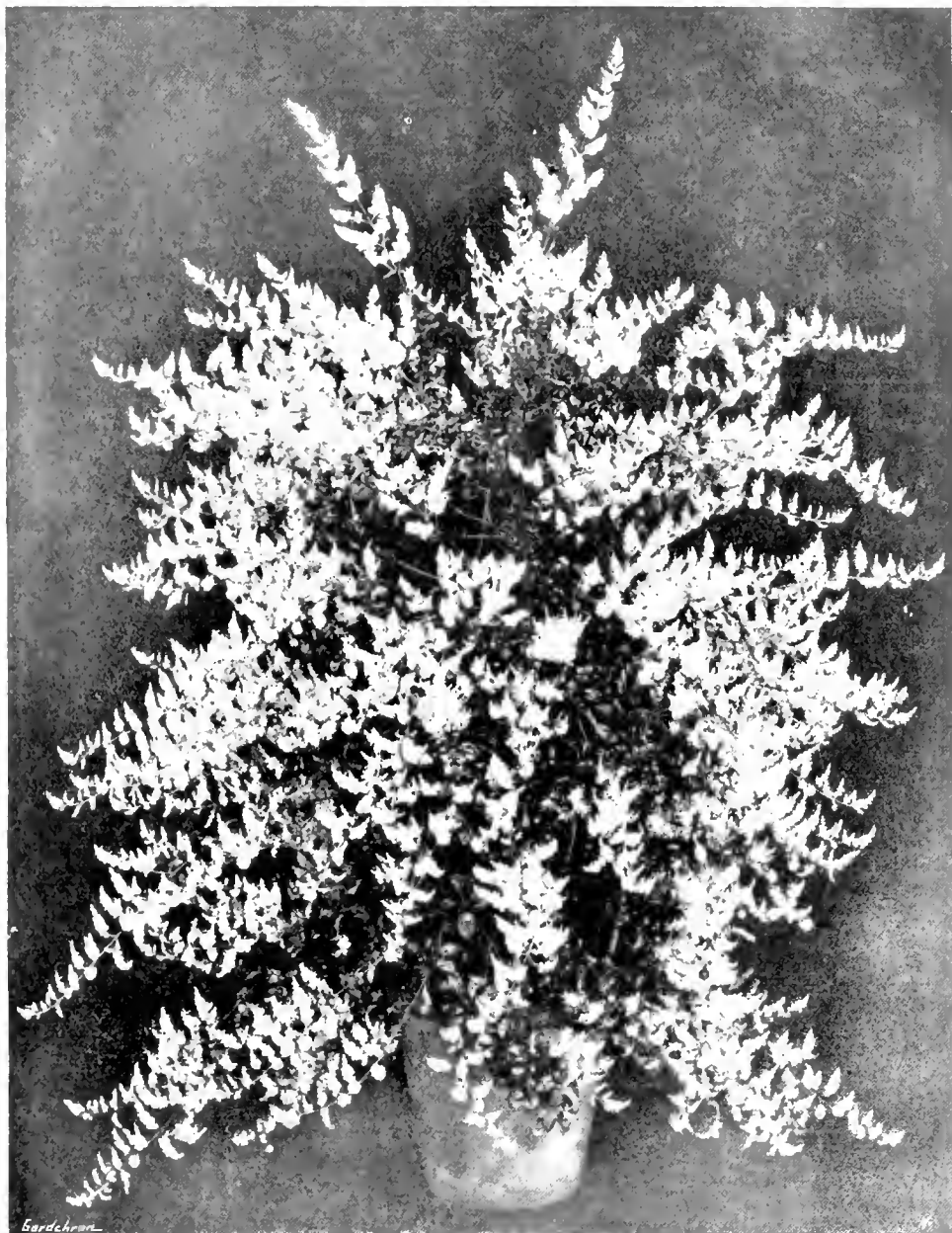


FIG. 109.—VERONICA HULKEANA AS A POT PLANT.

(See page 261.)

Mr GURNEY FOWLER, and moved that the Council place on record their sense of the loss which the society had sustained. In supporting the president's motion, the Rt. Hon. the Lord BALFOUR OF BURLEIGH bore testimony to the fact that there was no member of the Council who failed to recognise the knowledge, the business ability, and the self-denying energy which the treasurer had uniformly shown in the discharge of the duties of his office. The Council could never forget the valuable services which Mr. FOWLER had rendered to the society during his tenure of office. It was further mentioned

practice in agricultural or horticultural occupations, and that they are of good character. The training, which will be given under the auspices of the school, but at public expense, will occupy one year in each case, and can be taken up at any period. It will be entirely of a practical nature, including fruit-culture, vegetable-growing, and the raising of plants and flowers. Lectures will also be given by members of the staff of the school. The students will attend the school daily, and will be provided with a small sum of money each month to cover their necessary expenses.

LETTER FROM THE EASTERN FRONT.—"Many thanks for the *Gardeners' Chronicle*, which I have received safely each week through the kindness of Lady THEODORA GUEST. You will note my new address, and see that I am now in Mesopotamia. The *Chronicle* is very welcome to me out here; it seems good to read all the news in the old paper as in the days of old, and surely the *Gardeners' Chronicle* is the king of all gardening papers. Out here there is nothing but miles of sand and desert, but along the Tigris there are Palms. Date Palms—fine trees some of them are, and now sending up flower spikes. I have never seen so many flies as there are in this country. They are a great nuisance. Sometimes the air is black with locusts. It seems hotter to me out here than in India, and the light tries one's eyesight. But we 'carry on' in spite of all for the Old Country." A. C. Davis.

THE QUARRY, SHREWSBURY.—We note in the *Shrewsbury Chronicle* of the 5th inst. an appreciative reference to the spring gardening in the Dingle, a favourite portion of the pretty park known as the Quarry, where the annual flower shows are held. In nearly all cases the bulbous plants are associated with other kinds of spring flowers. The following are instances:—Blood-red Wallflowers with Prince of Austria Tulip; yellow Wallflowers with Couleur Cardinale Tulip; Purple Queen Wallflowers with White Swan Tulip; Fire King Wallflower with Dusart Tulip; Pink Beauty Tulip with Myosotis; Chrysolora Tulip and Myosotis; Wouverman Tulip and Double Arabis; Keizer Kroon Tulip over Double White Daisies; Silver Standard Tulip over Aubrietia; Cottage Boy Tulip on Myosotis; Couleur Cardinals Tulip on Double Crimson Daisies; and White Swan Tulip with Polyanthus. Mr. A. J. WARD, who has charge of the Shrewsbury parks, is now about to leave them, we hope, temporarily. He is looking forward to joining the Royal Horse Guards on the 20th inst.

ASSESSMENT OF ZEPPELIN DAMAGE.—The National Horticultural Society of France is agitating to obtain a satisfactory scheme of valuation in cases of damage to nurseries and horticultural establishments by Zeppelin raids. Since the passing of the law by which all owners of damaged property were entitled to compensation (December 26, 1914), committees have been appointed in each district to assess the damage done, but their composition is not considered satisfactory. The main point insisted on by the society is that each committee shall contain at least one member with expert agricultural or horticultural knowledge who is competent to assess the value of plants that may be injured or prejudiced by the damage caused to glass-houses and other property of that nature.

PUBLICATIONS RECEIVED.—Cornell University Bulletins:—No. 352, *Effects of Variations in Moisture Content of Certain Properties of a Soil and on the Growth of Wheat*; No. 346, *The Tarnished Plant-Bug*; No. 347, *Endothia Canker of Chestnut*; No. 354, *Further Experiments in the Dusting and Spraying of Apples*; No. 358, *Some Important Leaf Diseases of Nursery Stock*; No. 361, *The Home Grounds*; No. 363, *Phytophthora Disease of Ginseng*; No. 342, *Sweet Pea Studies—IV. Classification of Garden Varieties*. (Ithaca, New York: published by the University.)—Bulletin No. 358, U.S. Department of Agriculture (*Studies of the Mexican Cotton Boll Weevil in the Mississippi Valley*). By R. W. Howe, Washington, Government Printing Office.—Reprints from *Journal of Agricultural Research*, U.S. Department of Agriculture, *Oviposition of Megastigmus Spermatrophus in the Seed of Douglas Fir*. By J. M. Miller; and *Insect Injury to Cotton Seedlings*. By B. R. Coad and R. W. Howe. (Washington: Government Printing Office.)

MODERN HORTICULTURE.*

PLANTS AND THE RHYTHM OF THE SEASONS.

THE broad features of the seasonal periodicity exhibited by plants are known to all: the gold and russet and the red of the dying autumn landscape, the white winter nakedness of the leafless Birch, the emerald of the Larch in spring, the burnished silver of Laburnum buds tarnishing as growth begins, and the mauve-purple haze which hangs over the Birches about to break into leaf, the riot of growth and colour in summer: all impress on the mind the inevitable and dramatic sequence of the seasons.

The more closely we observe them the more exquisitely the plants appear to adjust themselves to the season's changes.

Only now and again may we find a hint that this adjustment is not so inevitable as it would seem. Sometimes in late summer the Oaks break out in Lammas shoots as though mistaking late summer for spring, or an Apple tree may flower at the time when its neighbours are ripening their fruits.

Such cases are significant, for they may serve to indicate the means whereby the natural adjustments are made. The Lammas shoots, for instance, only come after the trees have been defoliated by drought, or insects' attack. The shock which the plant has suffered disturbs the rhythmic course of its development, and proves that it is not the seasons that control the plant, but the plant which fits its life to them. How this adjustment is made must therefore be the object of our inquiry.

We may get a clue to the discovery of the causes of winter rest by comparing plants which have an annual resting period with those which have not. Among the latter are those whose span of life is too short to be caught in the net of the seasons. These are the ephemerals: herbs for the most part, with a length of life to be measured not by months but by weeks. At any auspicious time the seeds germinate, the plant grows, flowers, and dies, and a second, and even a third, generation appear within the year. Chickweed and Shepherd's Purse and many garden flowers are members of this class. So, too, are many of the weeds which rob the farmer by appropriating food and water from the soil.

Although, as the term implies, annuals usually flower and seed and die within the year, this is not necessarily, or always, the case. If they are hardy, and if the flower-buds are picked off as fast as they form, and the plants thereby prevented from flowering, many annuals belie their name, and go on growing through another year.

Mignonette is an example of a plant which, whilst normally behaving as an annual, may be made perennial by the rigorous pinching of its flowers. The fact that it may be propagated year after year by cuttings is evidence also that its span of life is not irrevocably fixed. Yet if it flowers and seeds, it dies before the year is out. Hence the reason of its death may be inferred: all the food substances that it makes are passed on to the seeds, and death is due to exhaustion incident on seed production. The annual then is the plant which bequeaths its all—including its life—to its descendants. This habit of self-abnegation is shown by many plants, which take far more than a year to come to maturity. Thus the Talipot Palm (*Corypha umbraculifera*) of the Eastern tropics lives vegetatively for seventy years and then throws up a gigantic flower-head, blossoms, sets seed, and dies. Since many neighbouring plants are from the same crop, they flower about the same time, and impress all, not only with a sense of majesty, but also with a sense of mystery.

With the biennial plants so common, and with good reason, in our kitchen gardens—Turnip,

Beet, Cabbage, etc.—the issue between individual life and the bearing of offspring is made the subject of a pretty compromise. The first year is devoted to storing substance—hence the enlarged root of the Turnip, Carrot, and Beet, the fleshy, persistent leaves and thick stems of the Cabbage, and the bulb of the Onion. In the second year the stores are depleted in the interest of the seeds, and the biennial dies of the same malady—devotion to offspring—as that which proved fatal to the annual. This study of the annual and biennial plants has performed the service of giving us a clue to the secret of the power of the perennial plants—the trees and shrubs and herbaceous perennials. They flower and endure. At the first touch of spring they are awake and growing, forming new organs, and enlarging the rudiments of those laid down last year.

The capital of the perennial consists in food substances, starch, or oil, or sugar, and also nitrogenous compounds. The plant itself manufactures them from the raw materials which it absorbs from the air and soil. The source of the energy for this first and greatest of all manufactures—of sugar and starch—is sunlight, and, as all the world now knows, the green leaf is the factory in which the food of the world is prepared.

In the annual all surplus food is passed on to the seeds. The plant itself has no reserves of food to fall back upon. The perennial, on the other hand, makes more food than it can use, stores it in large quantities, and hence is in a position to start into growth again in early spring and to mature with amazing rapidity from the rudiments laid down in the past year leaves and branches and flowers by the simple expedient of calling up its reserves of capital. As soon as external conditions make growth possible, the perennial mobilises its reserves, the starch stored in the root and stem is changed to sugar, which is carried with water along the vessels and, reaching the buds, supplies them with the materials for their growth.

Furthermore, thanks to its possession of this wealth of food, the perennial shrub or tree is able actually to lay down in the heyday of its growth the rudiments of next year's organs. As in the Hazel, the Chestnut, many fruit trees, etc., the young buds formed in autumn contain already the rudiments of next year's leaves and flowers. Hence the possibility for the almost magically rapid unfolding of buds which takes place in early spring. Hence, also, the power, if an early frost destroy those prematurely opening buds, to supply other less forward buds with food. The perennial is, indeed, a plant of resource, and, having learned that, we may understand how, even though our Roses are tempted by the mildness of the winter to ignore the lesson of the seasons and to begin to grow in January, yet because of their reserves of food, their reserves of embryonic buds, and their power of improvising new buds, they are able to retrieve their mistakes and flourish in spite of their rashness in beginning their growth too soon.

THE FALL OF THE LEAF.

A sharp frost in late October, and the ground beneath the trees is carpeted with leaves. But, as a wise critic has said, the secret of dramatic surprise lies in the art of preparation, and in this recurring drama of the plants and the seasons the dénouement in autumn—the seemingly sudden arrest of life—is dramatic only because of the long and subtle preparation made by the plants themselves.

The fall of the leaf is no mere mischance due to the sudden breaking of a stalk rendered brittle by the drying of the sap.

Weeks before the leaf falls, preparation is made for this act of self-amputation, and the wound which is to be made is healed in advance. Cells in the stalk begin to grow again, and resume the

* Lecture delivered before the members of the Royal Institution by Dr. Keeble, F.R.S.

power of division which they possessed in their youth. On the side near the base of the stalk they form a layer of corky tissue, but beyond this layer they form a plate of thin-walled cells, and this work is taken in hand long before the leaf must fall. The corky cells shut off all the leaf beyond from the reach of water. Thus the leaf withers, the thin-walled cells dry and break apart, and the leaf is held by a mere thread composed of the woody vessels which run along the stalk. These vessels become choked with gum and so brittle that a breath of wind suffices to detach the leaf and bring it to the ground.

Yet before this self-amputation of each leaf is effected, other changes preparing for its death have occurred in the leaf. Much of the useful material contained therein becomes dissolved and travels along the stalk, to be stored in the young buds, or near by.

It is a curious fact that whereas most of our broad-leaved trees discard their leaves by the formation of this peculiar absciss layer, the Beech and the Oak do not. Hence it is that their leaves hang longer on the trees, persisting in sheltered spots even until spring, and it is no less curious that it is the leaves of Oak and Beech which make the best leaf-mould. This may, perhaps, be due to the fact that the leaves of these two trees not only do not practise self-amputation, but also do not go through the preliminary emptying-out process, and hence contain more salts and more organic matter than is left in the withered leaves of other trees.

The preparation for winter rest is by no means confined to the leaves. Just as the amputated stump of each leaf-stalk is protected by a waterproofing of corky cells, so in the stem, often long before summer is past, layers of cork are formed, sometimes near the surface, sometimes deep down. Everything outside the corky layers, being cut off from supplies of water from within, withers, dries, and shrinks. Hence, if the corky layer is deep, a thick, hard, irregular bark is formed, as in the Oak; if the cork is near the surface, as in the young Birch and Apple and London Plane, a smooth, thin bark is formed, which shreds off in flakes when the stem begins to swell again in spring.

In summer the deep-lying tissues of a tree stem, which, like all living tissues, require air, receive supplies from the atmosphere by way of breathing-pores or lenticels. The construction of a breathing-pore is simple. It consists of a loose aggregate of rounded cells, between which are spaces, through which air may pass from the surface inwards and water vapour or carbon dioxide given from the deep tissues may escape outward. In late summer a barrier of cork forms across each lenticel, and shuts off the living tissues from access of air. Hence it is rather a literal truth than a figure of speech to say that a plant anaesthetises itself, or drugs itself, to sleep, for with the establishment of the unpassable barrier of cork in the stem, carbon-dioxide, which is a waste and deleterious product of vegetable no less than of animal life, is unable to escape. Accumulating about and in the living cells, carbon-dioxide, as I shall show presently, undoubtedly acts as a narcotic, causing the tissues to slow down their activities and to pass into a lethargic state.

Yet another contribution to this self-imposed inactivity of plants, which we call winter-rest, is made by the change which occurs in the channels along which in summer-time many of the food substances pass from the leaves to distinct parts of the stem. These channels, known as sieve tubes, are not to be confused with the woody vessels along which water passes from the root to the leaves. The sieve-tubes occur in great numbers, and new sieve-tubes are found at each successive annual increment of tissue. They are to be found outside the wood, separated from the latter by that wonderful sheath of living tissue—the cambium, which every year, so long as the plant lives, adds a new layer of wood

on the outer face of last year's wood and a new layer of bark to the inner face of the bark. The chief elements of the bark are the sieve-tubes. Each tube contains living substance, and is of varying length, and joins at its ends with similar tubes. Stretching across the tubes at intervals are perforated plates dividing the tube into sections. Strands of living substance run through the minute holes in the sieve-plates, and so put one section of the tube in communication with another. During active life sugar and nitrogenous substances pass from the leaves into and along the sieve-tubes. Sieve-plates occur also in the walls of the tubes, and hence these reserve substances travelling up or down the tubes may pass across to supply any active growing tissues in the neighbourhood. Late in summer, in many plants at all events, the holes in each sieve-plate become stopped by the formation of a thick layer of callus—a substance more or less intermediate between gum and cellulose. In many plants the callus is dissolved away in the spring, and the traffic is resumed. A new set of sieve-tubes is also formed each spring, and so new routes for the distribution of food supplies are laid down each year.

Another preparation for winter rest, with which all are familiar, consists in the formation of scale-like leaves, small, and often leathery or coated with varnish, which enfold the buds formed at the top of the stem and at the base of each leaf. What provokes the plant to cease quite early in the year from forming foliage leaves and to produce these rudimentary scale leaves which protect the bud within them? It is perhaps the insufficiency of the water supply, for in high summer the foliage leaves attract to themselves a large quantity of the water which the roots supply from the soil.

If now we consider the significance of these changes, we conclude first that by the auto-amputation of the delicate leaves and the corking over of their stumps, by the formation of cork in the stem, and by the covering of the delicate buds by hard scales, the plant protects itself from what might otherwise prove a fatal loss of water.

Second, by closing the sieve-tubes, and thus cutting off supplies of food, tissues which might be tempted to continue active are disciplined into proper inaction by being put on the shortest of commons.

Third, by sealing up the stem, carbon dioxide, formed by the respiration of the living cells, is retained in the tissues, and, acting as a narcotic, serves to anaesthetise those tissues.

Lastly, we have to ask ourselves the most difficult question. How is the plant able to make in due order, and long before the first hint of winter, all these purposeful preparations?

(To be continued.)

GARDEN PICTURES AT THE ROYAL ACADEMY.

At the Royal Academy exhibition pictures of gardens and flower pieces this year are to be found chiefly in Galleries IX., X., and XI., where the smaller works are hung. Distinctive among these are three little pictures by the president, Sir Edward J. Poynter—distinctive in that they illustrate well his sympathy with Nature and the conscientious spirit of pre-Raphaelitism. He does not ignore the lovely details and the variety in form of the foliage of trees, even in an age when the dull emptiness of the would-be "impressionist" and the chaotic splashing in paint of the futurist are the fashion. Sir Edward Poynter's trees are differentiated; his Oaks are Oaks, and his Laurels are not magnified bramble bushes.

The first of his works has names "Not Twenty Miles from London." It might well have been a study of a Near Eastern or Italian garden. Ilexes and Junipers are the outstanding features,

but the East and West have met and mingled in the hazy atmosphere of the blue hills of England. The second work is entitled "Wall Flowers at Cherkley Court"; the third, "In a Kensington Garden," is a masterpiece in golden-green light and bosky shade, emphasised by the outspread wings of a dove caught in the meshes of the sunlight.

Harold Conway has two charming studies of an old stone-flagged garden, backed by gateways adorned with quaint stone balls and the gables of an old grey house. One he names "Madonna Lilies," for these flowers predominate; the other "In an Old Garden." Both are full of lovely and varied colour: the reds, pinks, and blues are blended and harmonised by the pearly-grey quality in the foliage, as though early-morning dew had toned the strong and vivid greens. There are several pictures which combine portraiture and flowers, the latter not merely accessory, but as principals in the forefront. Of these "Sweet Peas and Ramblers," by T. F. M. Sheard, is a skilful dinner-table arrangement, in which the lustre of silver plays a great part in forcing forward the reds and pinks.

In "Poppies," by S. Melton Fisher, a fair girl reading forms a background for a flaunting bunch of the brilliant flowers. But as a piece of pure-colour technique a long panel of "Blue Delphinium," by Valentine Jelley, cannot be rivalled by anything in the exhibition. Apart from the many shades of the usual spring flowers, such as "Anemones," by Vera Jannoch, and "Primroses," by Ruth Latter, there are several interesting canvases illustrating less hackneyed subjects. We may cite as instances "June Flowers," a study of "Snowballs and Pink Honeysuckles," by Anna Maitland, and an admirable group of "Cluster Roses" in a copper pot, by R. Crafton Green. Roses are certainly not uncommon subjects, but this variety, with its white beauty of firm-set petals, set off by golden buds and dark, glossy leaves, is not often seen in art. M. L. Breakell.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

VERONICA HULKEANA.—I enclose with this note a photograph of *Veronica Hulkeana* (see fig. 109), in the hope that it may be of interest to readers of the *Gardeners' Chronicle*. The plant was purchased from Messrs. Veitch's nursery in April, 1911, in a 24-size pot. We planted it out at the end of May in an open situation, where it grew freely; it was lifted and potted into a No. 12 pot at the end of October, and it stood in a cool Peach house all the winter, frost being excluded. In the following April it flowered freely and was a magnificent sight, being 5 feet in height and nearly 4 feet through. I do not think this plant is grown so much as its merits deserve. Cuttings will strike freely at any time of the year. *Thos. Lunnicks, Colley Manor Gardens, Reigate.*

CALCEOLARIA COTSWOLD HYBRID.—This beautiful *Calceolaria* (see *Gard Chron.*, Sept. 19, 1914, p. 206) is a most useful plant for the conservatory and house decoration. The plants are easy to grow, the flowers are borne on erect stems, and have a very graceful appearance, requiring little, if any, staking. There is a wide range of colours, which includes some with very pretty markings. Seed should be sown in July, and the plants pricked out as soon as ready, and potted before they get root-bound. Small shifts are best, and the final pots should be not larger than 7 inches. The plants should be grown quite cool. *Alan Falconer, Poulton Priory, Fairford.*

TREES UPROOTED BY GALE.—The gale in March last did considerable damage to trees on this estate and in the neighbourhood. In the avenue leading to the old Thundridge church 60 large Elm trees were uprooted. Spruce, Larch and Birch suffered next in severity; many Larches were snapped in half; Douglas Firs,

which have been extensively planted here during the past 20 years, withstood the storm extremely well. I was impressed by the large number of apparently healthy old Elms that showed, when blown down, severe signs of decay at the roots and stump. The decay must have been going on for a number of years. In the pleasure grounds a tree of *Abies cephalonica* Apollinis was blown down; this was, I believe, considered to be the finest of its variety in England. The tree measured 75 feet 5 inches in height, and its circumference 2 feet from the ground was 6 feet 10 inches and at 8 feet, 5 feet 10 inches. Another fine tree uprooted was *Abies Nordmanniana*; it was 91 feet high and had a circumference at 8 feet from ground of 5 feet 1 inch. It was a particularly straight specimen. Cedars here were also much damaged, branches being torn off and three of the largest specimens uprooted. Many Laburnums were wrecked; the ground being sodden with water at the time, the top weight was too heavy for the roots to bear them upright. The gale should teach landscape gardeners not to rely on Conifers too much for effect, for there is a likelihood of them being all ruined in a few hours. *P. W. Church, Poles Gardens, Ware.*

THE NORWAY SPRUCE.—It is good to read a condemnation of this greatly over-rated tree from so high an authority as Mr. Elwes. I have long been of opinion that it is practically worthless, except, as he says, in very special localities. Even in such highly favoured situations as the valley of the Tay at Dunkeld, where the Common Spruce may be seen at its best, better and cleaner timber might have been obtained if certain other species of Conifer had been planted. Unfortunately, in the haphazard, indiscriminate fashion of mixed planting which has prevailed for nearly a century in the greater part of northern England and Scotland, the Common Spruce has been, and is, an almost invariable ingredient, with such miserable result as may be seen, especially in districts near the sea. I cannot share Mr. Elwes' unfavourable opinion of the Japanese Larch. Even if further experience should justify his disbelief in its value at maturity, there is no tree capable of producing pitwood of similar size and quality in so short a time. Douglas Fir grows as fast after it has started, but it takes a couple of years before it gets on its legs, so to speak. Sitka Spruce, also, is as rapid in growth as the Japanese Larch, but it is very susceptible of frostbite until it is three or four feet high, and the young poles are much softer than the Larch. Pitwood, hitherto almost entirely supplied from foreign sources, ought to be the surest and quickest source of revenue from woodland in this country. I have to-day taken measurements in an acre which was planted with Japanese Larch, pure, thirteen years ago, as an experiment. The average height is now 32 feet, and the average girth at 4 feet is 18 inches. No finer pitwood could be desired. The trees were planted 4 feet apart, and have been once thinned, and the boles are quite clean. This plot forms part of a wood planted on very old pasture, gravelly loam overlaying boulder clay. The rest of the wood is a mixture of Scots Pine, European Larch, Ash, Beech and Sycamore (the last named self-sown). Most of the Larch has been cut out, being badly diseased; among those that remain there is hardly a single sound one. In fact, so prevalent has *Dasyctypha* become in this and many other districts that it has come to be a question between planting Japanese Larch or no Larch at all. To plant European Larch is a sheer waste of labour and land. The immunity from canker which the Japanese Larch owes to its own vigour is well known in the plantation referred to, for although, as I have said, the European Larch has succumbed, I have failed to detect a single patch of *Dasyctypha* in the acre of Japanese. I may add that, having raised about 12,000 of the Western Larch (*Larix occidentalis*) from seed, I planted them, beautifully rooted, on three acres of good land with a north aspect. In the nursery they grew as fast as Japanese Larch, but the plantation has proved an absolute failure. Most of the trees have died, and the rest have made little growth.

A dozen plants, however, were put out in a peaty hollow, most unsuitable for European Larch, and they have grown vigorously. *Herbert Maxwell, Monreith.*

THE LATE MR. COOLING.—I should like to point out that an error crept into the notice of Mr. W. F. Cooling's death published last week. Mr. Cooling, senior, is still alive and well, and, in spite of his advanced age (86), he takes an active part in the management of the business. He is naturally distressed by the death

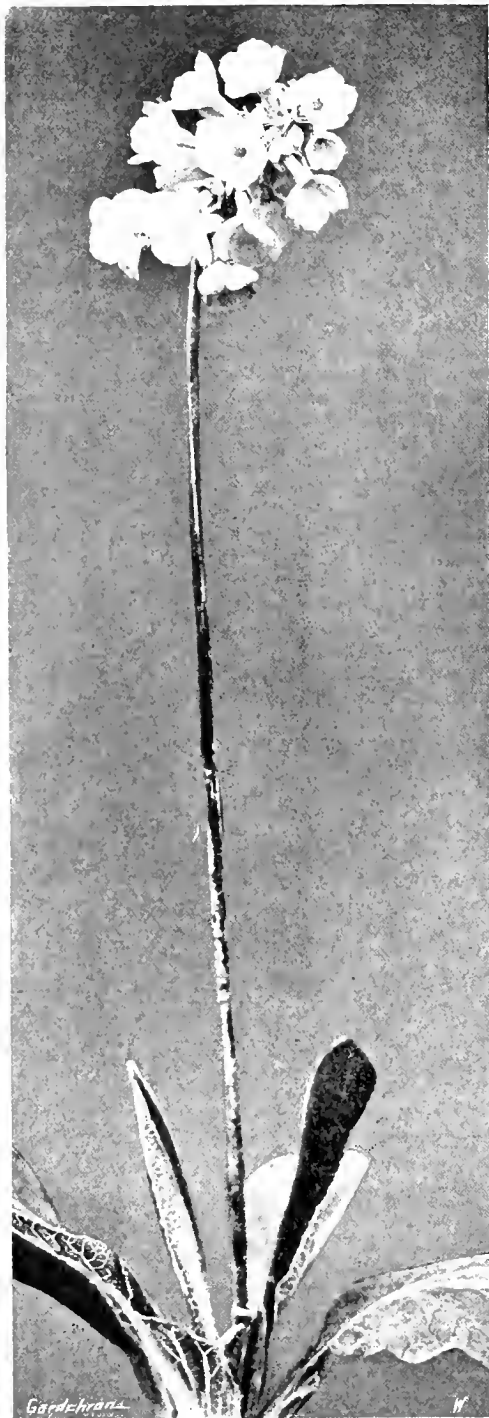


FIG. 110.—*PRIMULA NUTANS*, A NEW CHINESE SPECIES WITH FRAGRANT, PURPLE-BLUE FLOWERS. (R.H.S. Award of Merit, April 11, 1916. See p. 225.)

of his son, who was beloved and respected by all who knew him. In his death our brightest horticultural light has gone out in this district. In all horticultural matters his advice and assistance were in request, whether it was on occasion of the visit of the Bath and West of England Shows, the Royal Agricultural Show, or of the National Rose Society. *John Milburn, Bath.*

SOCIETIES.

ROYAL HORTICULTURAL Scientific Committee.

MAY 2.—*Present:* Mr. H. J. Elwes, F.R.S. (in the chair), Canon Fowler, Dr. Keeble, Col. Rawson, Messrs. Worsley, Worsdell, Fraser, Mailes, Allard, Holmes, Ramsbottom and Chittenden (hon. sec).

Narcissus with two spathes.—Mr. Worsdell said that he had been particularly interested in the *Narcissus* shown at the last meeting by Mr. Bowles. It had two membranous spathes at levels separated by some inches from one another, a state probably arising from proliferation.

Maize with twin seedlings.—Mr. Worsdell also showed a grain of Maize with twin seedlings—an uncommon state.

Fungus attacking Myrtus communis.—Mr. Ramsbottom exhibited foliage of Myrtle with brown margins and tips of the foliage due to the attacks of *Phyllosticta nuptialis*, the fruits of which were present on the dead areas. The specimens came from Torquay.

Dividing leaves of Elm.—Mr. Fraser showed shoots of *Ulmus campestris viminalis* with leaves divided at the tips, and said he had noticed the variety *aurea* behaving in the same way at Holland House. The more vigorous shoots were most affected, and, as members pointed out, there was a considerable amount of variation in the foliage (especially in the amount of variegation in variegated forms) from year to year.

Moraea spathacea (see fig. 102 in last issue).—Mr. Elwes showed flowers and foliage of a plant which had proved perfectly hardy at Colesborne, and which may be a form of *Moraea spathacea*. It differs somewhat from the figure of that plant in the *Botanical Magazine* (sub nom. *Diets Huttonii*), and has foliage about 6 feet long and about $\frac{1}{2}$ inch wide, whereas the original form had leaves only 2 feet long and an inch wide, as Mr. Worsdell had seen it growing wild. The seed of Mr. Elwes' plant came from Mr. Greve.

Regelia-cyclus Irises.—Mr. Elwes showed flowers of some *Regelia-cyclus* hybrids raised by Mr. van Tubergen. He had plants growing since their introduction, but found that some of the forms were far less vigorous and reliable than others. They do best in fairly stiff soil and need to be kept dry from June onwards.

Epidendrum coriaccum.—Mr. Lane exhibited a well-grown specimen of this species, which Mr. Worsley said was very much like a form he had seen growing in Brazil, but which was there considerably taller than the present form.

Fritillaria.—Mr. Elwes exhibited flowers of *Fritillaria acutiloba*, *F. Kochiana*, *F. gracilis*, *F. pomona*, *F. acmopetala*, *F. Elwesii*, *F. pyrenaica*, *F. pontica*, *F. Siehana*, *F. Whittallii*, *F. lutea*, and a small form with flowers of the same colour and scent as *F. obliqua*, but only half the size.

Aberrations in Tropaeolum majus.—Colonel Rawson showed a further series of aberrations in *Tropaeolum* which he attributed to interference with the incidence of certain rays of light, a fuller account of which will appear in the *Journal* of the Society.

GENERAL BULB-GROWERS' OF HAARLEM (HOLLAND).

THE different Floral Committees made the following awards at their meetings in February, March and April, 1916. The descriptions of the varieties are furnished by the secretary of the Society.

FIRST-CLASS CERTIFICATES.

Tulip Prince of Wales (Darwin), salmon-red, a forcing variety of good quality; *Freesia Tubergonii* *Apothéose*, white and lilac, a very floriferous variety; *Narcissus* *Apothéose* (show), perianth light canary-yellow.

AWARDS OF MERIT.

Tulips Bartigon, fiery-red; *Bleu aimable*, violet; *Dal Ongaro*, silvery-lilac and white; *la Fiancée*, rose; *Charles H. Marot*, dark lilac; *Princess Mary*, rose-colour; *Pygmalion*, light magenta. These seven varieties of Darwin Tulips are recommended for forcing, and were

exhibited in bloom in February. *Tulip Mm. van Zanten*, a double variety of brownish-red shaded orange-red; *Narcissus Warmond* (show), dark yellow; *N. Odin* (show), golden-yellow, perianth broad and trumpet denticulated; *N. Scarlet Eye* (show), creamy-white, cup orange-red; *N. Sir Dighton Probyn* (garden), trumpet dark yellow, perianth sulphury-white; *N. Miss Willmott* (show), pure white perianth, cup dark yellow and orange-red.

CERTIFICATE OF THE HAARLEM TRIAL GARDEN.

Crocus Queen of the Blues; *C. British Queen*, white; *C. Lord Balfour*, *C. Princess Helena*, *C. Lady Derby*. The three last are striped varieties.

LINNEAN.

ORIGIN OF RED CURRANT.

MAY 4.—At a meeting of the Linnean Society held on the 4th inst., Mr. E. A. BUNYARD read a paper on "The Origin of the Garden Red Currant."

The author stated that until recently the Red Currant was regarded as descended from *R. rubrum*. Ed. Janczewski, however, showed in 1907 that *R. vulgare* of Lamarck was the species chiefly concerned. In his collection of garden varieties 44 were derived from *R. vulgare*, 1 from *R. petraeum*, and 4 from *R. rubrum*. Three of these last were unnamed varieties from Lithuanian gardens. The writer has collected 70 varieties from Europe and America, and considers Janczewski has under-valued the importance of *R. rubrum*. The influence of *R. petraeum* can also be traced in many varieties. The Red Currant has been cultivated from the early 15th century, and was at first pure *R. vulgare*; for 100 years no variations were recorded. *R. petraeum* was introduced into gardens in 1561 by Konrad Gesner, and a few years after Camerarius mentions the "old" red and a new variety "*baccis rubris majoribus*."

R. rubrum seems to have come into Currant history at a later date. A large-fruited variety, called by Janczewski *R. vulgare macrocarpum*, was introduced in 1840, and is considered by him a mutation or giant form of *R. vulgare*. The origin of this variety is uncertain, but neither in size of fruit nor in other characters does it exceed forms of *R. petraeum* which have been found wild.

The author considers that inter-hybridisation of the three species—*R. vulgare*, *R. rubrum*, and *R. petraeum*—is sufficient to account for the numerous varieties of the Red Currant as grown in gardens to-day, and the supposed effects of cultivation need not in this case be invoked.

Mr. F. W. WILLIAMS, from his own recent study of the British forms, supported Mr. BUNYARD's conclusions.

DISPERSAL OF ORGANISMS.

Dr. J. C. WILLIS then introduced the subject of the Dispersal of Organisms, as illustrated by the floras of Ceylon and New Zealand.

He stated that in two recent papers on the flora of Ceylon, and in a forthcoming one on the flora of New Zealand, he had brought forward conclusions on geographical distribution which, if accepted, will remove that subject from the immediate realm of evolution, and show that it may be largely studied by arithmetical methods. Once a species is evolved, its distribution depends upon causes which act mechanically. As all families and genera behave alike, it seems to him that one cause only must be responsible for their behaviour, but a combination of causes may be acting, though in that case each cause must act mechanically on all alike.

The cause which seems the determining factor in dispersal is age within the country concerned. This opinion was based upon the results of his work on the Ceylon flora, which showed that the endemic species (presumably the youngest) occupied much the smallest areas, those common to Ceylon and South India (next youngest) areas considerably larger, and those of wider dispersal than this (the oldest) areas yet larger again, while at the same time each group showed a graduated series of plants occupying each size of area, the endemics varying down the scale from 90 to 235, the wides up from 144 to 462.

Not only do the grand totals show this distribution according to age, but also family by

family, and genus by genus (of reasonable size) do so. The rarity of all the endemics (in figures from 1 to 6) is 4.3, and when taken in groups of not fewer than 14 it only varies from 3.9 to 4.9, while that of the other two groups varies similarly about 3.5 and 3.0.

Some having objected that Ceylon is a special case, he obtained confirmation of his views by working out the flora of New Zealand. To test his hypothesis, he wrote the paper first predicting what, under that hypothesis, must be expected, and as all his predictions were confirmed by the facts, the result has given him considerable confidence in the truth of the hypothesis.

One does not often come across cases like Ceylon, where the local species can be divided into groups according to age, and confirmation of his hypothesis must rest on finding cases to parallel one or more of the features which showed so conspicuously in the Ceylon flora. New Zealand parallels it in several respects, and other cases are quoted in which similar parallelism is exhibited.

Some of the objections to these views have been considered, e.g., the hackneyed argument that introduced species spread rapidly over islands at the expense of the indigenous flora; this is shown by the cases of Ceylon and Rio de Janeiro to be an unsound position. The objection that the endemic species are the oldest in a country is also dealt with, likewise that which asks why one does not see the spreading going on, if it depends upon age.

NATIONAL AURICULA AND PRIMULA (Southern Section).

MAY 2.—The annual competitive exhibition of this Society was held on the 2nd inst., in conjunction with the R.H.S. fortnightly meeting, in the Vincent Square Hall, Westminster. The schedule embraced a very large number of classes, and most of them were represented by one or more good exhibits. Competition was restricted to a very few, and the principal honours fell to Mr. James Douglas and Miss Lowinsky. Messrs. Phillips and Taylor were Mr. Douglas' chief rivals in the larger classes, and they made a good fight, but Mr. Douglas had always a little to spare. This exhibitor showed splendid plants in the class for 12 Auriculas, dissimilar, in which he was placed 1st. The varieties Sir John Falstaff, Richard Headley, Harrison Weir, Eucharis, Shirley Hibberd, Fingo, Prince Charming, W. Smith, Marmion, George Lightbody, and Acme were all in excellent condition, and they represent a selection of the choicest florists' Auriculas; 2nd, Messrs. PHILLIPS and TAYLOR, whose best plants were Mikado, Mars, W. Brockbank, Geo. Rudd, Mrs. Henwood, and Climax.

In the similar class for 6 Auriculas, dissimilar, these exhibitors competed with the same result: Mr. Douglas' best varieties were William Smith (adjudged the premier show Auricula), Acme, Marmion, Geo. Lightbody, Harrison Weir, and Fingo.

For 4 Auriculas, dissimilar, Miss LOWINSKY, Sunninghill, Berkshire, won the 1st prize with good plants of Acme, Abraham Parker, Smiling Beauty, and Favourite; 2nd, Mr. J. ALLGROVE, Langley, Slough, with George Lightbody and Mrs. Henwood as his best varieties.

Miss LOWINSKY also showed best in the class for 2 Auriculas, dissimilar, the varieties being Heatherbell and Geo. Rudd; 2nd, Mr. W. T. PAIN, Sevenoaks.

Mr. DOUGLAS won both the 1st and 2nd prizes in the class for a green-edged Auricula with the varieties W. Smith and Prince Charming, respectively. This exhibitor was also placed 1st and 2nd in the class for grey-edged varieties, showing George Rudd in both cases; 3rd, Miss LOWINSKY, with Dinham. The best self Auricula was Mikado, shown by Mr. CHAS. TURNER, Slough.

The best exhibit of four show Auriculas staged by amateurs who cultivate the plants themselves was shown by Mr. H. W. MASON, Binstead, Surrey; he had good plants of Heather Bell, Victor, Colonel Chamneys, and a seedling; 2nd, Miss LOWINSKY.

Alpine Auriculas.—The class for 24 varieties, distinct, was contested by Mr. Douglas and

Messrs. Phillips and Taylor. Mr. DOUGLAS was placed 1st for a very meritorious collection, which included the Premier Alpine variety, a superb plant of Argus. Others especially good were Duke of York, May Dream, Claud Halcro, Prince of Tyre, Roxborough, Picotee, Admiration, Phyllis Douglas, and King George; Messrs. PHILLIPS and TAYLOR were awarded the 2nd prize. They showed a beautiful crimson-maroon variety, with fine gold centre, named after Miss Lowinsky. These two exhibitors occupied similar positions in the class for 12 varieties.

The James Douglas Memorial Challenge Cup was offered for the best 6 varieties. Miss LOWINSKY won the trophy with fine plants of Thetis, Argus, Mrs. James Douglas, Antonio, Phyllis Douglas, and Claud Halcro; 2nd, Mr. J. L. GIBSON, Belmont, Surrey, who won the 1st prize in the class for 4 varieties, with Phyllis Douglas and Argus as his best plants. In the remaining classes for Alpine Auriculas 1st prizes were won by Mr. T. PAIN, Seven Kings, Mr. H. W. MASON, and Mr. DOUGLAS.

Primulas.—Prizes were offered in a class for 6 Primulas, a noteworthy exhibit of new Chinese species and varieties exhibited by Mr. ALLGROVE receiving the 1st prize. The more interesting plants were *P. sibirica chinensis*, with tall scapes of rosy-lavender flowers; *P. Forrestii*, a beautiful deep-yellow flower; *P. Veitchii*, rosy-purple; *P. involucrata*, *P. tangutica*, the red Primula, and *P. pulverulenta* Mrs. Berkeley, a variety with salmon-pink petals and white farina on the flower-stalks. Mr. ALLGROVE also showed best in the class for a group of Primulas and Auriculas; 2nd, Mr. MILLER, Wisbech, who won 1st prizes for (a) Polyanthuses in pots, (b) 12 Primroses, dissimilar, and (c) double Primroses.

Non-competitive exhibits of Auriculas were shown by Mr. DOUGLAS, Mr. C. TURNER, and Mr. ALLGROVE, whilst Mr. JOHN CROOK, Fingest, Camberley, exhibited his choice strain of Polyanthuses in shades of terra-cotta and bronze.

Obituary.

DAVID PRIOR.—We regret to record the death, on the 2nd inst., in his 84th year, of Mr. David Prior, the founder of the well-known firm of Rose growers, D. Prior and Son, Myland, Colchester. Mr. Prior established the Myland business forty-six years ago as that of a florist and nurseryman. After some years he decided to specialise in the culture of Roses, and, assisted by his son, Mr. W. D. Prior, soon made the business famous. The Myland Roses were a feature at shows all over the country, and they won many remarkable successes, including the late King Edward's Challenge Cup, nearly two thousand other cups, and innumerable gold and silver medals. Mr. David Prior retired from the business in 1901 and went to live at Ramsgate. He was held in high esteem by his many friends both at Colchester and at Ramsgate, and was a man of a kindly and generous disposition.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending May 10.

A wet and cloudy week.—The first three days and nights were warm, and two of the days very warm for the time of year. Then came a change to colder weather both during the daytime and at night. On the coldest day the highest reading in the thermometer-screen was 47°, and on the coldest night the exposed thermometer registered 5° of frost. The ground is at the present time 6° colder at 1 foot deep and 2° colder at 2 feet deep than is seasonable. Rain fell on all but one day, and to the total depth of over three-quarters of an inch. During the week 2 gallons of rainwater came through the bare soil percolation gauge and half a gallon through that on which short grass is growing. The sun shone, on an average, for 1½ hour a day, which is 6½ hours a day short of the average daily duration for the time of year. The first three days were calm, but after that light airs as a rule prevailed. Curiously enough, during the last or cold half of the week the direction of the wind was entirely some point between south and west. The mean amount of moisture in the air at 3 o'clock in the afternoon exceeded a sea-sonable quantity for that hour by 16 per cent. A Horse-chestnut tree in my garden came first into blossom on the 7th inst., or four days earlier than its average date in the previous 25 years, and two days earlier than last year. E. M.

MARKETS.

COVENT GARDEN, May 10.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal sale-men, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—Eds.

Cut Flowers, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Anemone, St. Bridget, per doz. bun.	2 6	3 0	Marguerites, yellow, per doz. bunches	2 6	3 0
Carnations, per doz. blooms, best American varieties	1 3	2 0	Narcissus, double white, per doz. bun.	3 6	5 0
— smaller, per doz. bunches	—	—	— Poeticus, per doz. bunches	1 3	1 6
— Carola (crimson), ex. large	2 6	3 0	Orchids, per doz.: — Cattleya	10 0	12 0
— Malmaison, per dozen blooms	—	—	— Cypripedium	2 0	3 6
— pink	4 0	6 0	— Odontoglossum crispum	3 0	4 0
Daffodils, per doz. bunches	—	—	Pelargonium, per doz. bunches, double scarlet	3 6	4 0
— Emperor	2 6	3 0	Richardias (Arums), per doz.	1 6	2 0
Eucharis, per doz. Forget-me-not, per doz. bun.	3 0	3 6	Roses: per dozen blooms—		
Gardenias, per box of 12 and 18 blooms	2 6	4 0	— General Jacqueminot	0 9	1 0
Gladioli, Blushing Bride, per doz. bun., six spikes in a bunch	4 0	5 0	— Duchess of Wellington	1 6	2 0
— Ne Plus, per doz. spikes	1 6	2 0	— Lady Hillingdon	1 0	1 6
— Peach Blossom, per doz. bun., six spikes in a bunch	4 0	5 0	— Liberty	1 6	3 0
— The Bride, per doz. bun.	1 8	0 —	— Madame A. Chateaux	1 6	2 0
Gypsophila, English, white, per doz. bun.	8 0	9 0	— Melody	1 6	2 0
Iris, Spanish, per doz. bunches	—	—	— Mrs. Russell	2 0	3 0
— white	8 0	10 0	— My Maryland	1 6	2 0
— blue	10 0	12 0	— Niphetos	1 6	2 0
— mauve	8 0	10 0	— Ophelia	2 0	3 0
— yellow	8 0	10 0	— Prince de Bulgarie	1 6	2 0
Lapageria, per doz. blooms	2 0	2 6	— Richmond	1 6	2 6
Lilium candidum, long	1 0	1 3	— Sunburst	1 6	2 0
— short	1 0	1 3	— White Crawford	2 0	2 6
— longiflorum, per doz. long	2 0	2 6	Spiraea, white, per doz. bun.	6 0	8 0
— short	1 6	2 0	Stephanotis, per 72 pips	1 9	2 0
— lancifolium album, long	—	—	Stock, double white, per doz. bunches	6 0	8 0
— short	—	—	Sweet Peas, English, white, and coloured, per doz. bun.	6 0	12 0
— lancifolium rubrum, per doz. long	1 6	1 9	— Guernsey per doz. bun.	1 6	2 0
— short	1 0	1 6	Tuberose, per packet, 24 blooms	—	—
Lily-of-the-Valley, per dozen bunches: — extra special 24 0 —			Tulips, Darwin various, per doz. bun.	6 0	9 0
— special	15 0	18 0	Violas, Cornuta, per doz. bun.	2 0	2 6
— ordinary	—	—	White Heather, per doz. bun.	—	—

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Adiantum (Maidenhair Fern) best, per doz. bunches	6 0	7 0	Eulalia japonica, per bunch	—	—
Agrostis (Fairy Grass), per doz. bunches	2 0	4 0	Fern, French, per doz. bunches	0 6	0 8
Asparagus plumosus, long trails, per half dozen	1 6	2 0	— common	4 0	5 0
— medium, doz. bunches	12 0	18 0	Galax leaves, green, per doz. bunches	—	—
— Sprengeri	8 0	12 0	Hardy foliage various, per doz. bunches	4 0	8 0
Carnation foliage, doz. bunches	4 0	5 0	Moss, gross bunches	5 0	6 0
Croton foliage, doz. bunches	12 0	15 0	Myrtle, doz. bun. English, small-leaved	6 0	—
Cycas leaves, per doz.	5 0	12 0	— French, per doz. bunches	1 0	1 3
			Smilax, per bun. of 6 trails	2 0	2 6

REMARKS.—Supplies of cut flowers are larger than last week. Home-grown Sweet Peas are arriving in first-class condition, the price varying from 6d. to 1s. 6d. per bunch. Gladioli are more plentiful; the varieties now offered are Blushing Bride, Peach Blossom, and Ne Plus Ultra. The first arrival of the Bride (white) is daily expected. There is a good supply of all Irises. Double white Narcissus arrived last week-end; the consign-

ments were small, and were soon purchased. The best blooms are coming from the Channel Islands. Small consignments are also being received from Cornwall, and prices are on the down grade. English White Stock finds a good demand, and is soon cleared. The return of dull, cold nights has considerably shortened the supply of Roses, red blooms being very scarce. Carnations, Catleysas, and Odontoglossums are more plentiful and cheaper. Lapagerias, Tuberose and Lilium candidum are now obtainable. Flowering plants, including Pot Roses, are in good demand. White, Blue, and Pink Hydrangeas are obtainable in various sizes, at prices from 1s. to 7s. 6d. each. There is an abundant supply of Pink Spiraeas, Lilium Harrisii and L. lancifolium rubrum are offered in good condition. Heliotropes, Pelargoniums, Salvias, Sedums, and herbaceous Calceolarias are fairly plentiful.

Fruit: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Apples—			Grapes,—con.		
— Albermarle, per barrel	40 0	41 0	— Cape, per 10lb. box	5 0	10 0
— Tasmanian & Australian, per case	7 6	16 0	Lemons, per case 10 0-27 0		
Bananas, bunch—			Lyches, per box	1 4	1 6
— Medium	7 0	9 0	Melons, Cape	1 0	1 6
— X-medium	8 6	10 0	— Guernsey		
— Extra	9 6	13 0	Each	3 0	4 0
— Double X	10 6	15 0	Muscats, English, per lb.	7 0	9 0
— Giant	16 0	18 0	Nuts, Brazils, new, per cwt.	60 0	64 0
— Red, per ton £20 0 —			— Coconuts, per 100	26 0	—
— Jamaica, per ton	£16	£17	Oranges, per case 12 6-35 0		
Dates, per doz. boxes	5 6	6 0	— Californian Seedless, per case	20 0	24 0
Figs, Green, per doz.	2 0	8 0	Peaches, English, per doz.	6 0	18 0
Gooseberries, green, per lb.	1 0	—	Pears, per case	—	—
Grape Fruit, per case	27 6	30 0	— Cape	6 0	8 0
Grapes: English, New Hambros, per lb.	2 0	4 6	Strawberries, forced, per lb.	2 0	4 0

Vegetables: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Artichokes, Globe, per doz.	4 0	6 0	Mustard and Cress, per doz. punnets	1 0	—
— Jerusalem, per bag	7 0	—	Onions—		
Asparagus, Paris green & Lauris	0 4	10 6	— Egyptian, per bag	13 0	14 0
— English	1 3	3 6	— Spring, per doz. bun.	7 0	—
Beetroot, per bag	4 0	—	Parsnips, per bag	4 6	—
Beans, Broad, per pad (France)	4 0	6 0	Peas (Guernsey), per lb.	0 7	0 8
Broccoli, Sprouting, per bus.	4 0	—	Potatoes—		
Cabbage, Spring, per tally	7 0	—	— Algerian, per lb.	0 24	0 3
Carrots, per cwt.	17 0	—	— Channel Islands, per lb.	0 3	0 4
Cauliflowers, per tally	4 0	10 0	Radishes, per doz. bun.	1 0	2 0
Celeriac, per doz.	4 6	5 0	Rhubarb, natural, per doz.	3 6	—
Cucumbers, per doz.	2 6	4 0	Scotch Kale, per bus.	3 0	—
English Beans, per lb.	0 10	1 0	Seakale, natural per Poz. pun.	9 0	—
French Beans, (Guernsey), per lb.	0 10	1 0	Spinach, per bus.	4 0	—
Garlic, per lb.	0 10	1 0	Tomatoes—		
Greens, per bag	2 6	—	— English, per lb.	0 9	1 0
Herbs, per doz. bun.	2 0	6 0	— Teneriffe, per bundle	20 0	24 0
Horseradish, per bundle	5 0	6 0	Turnips, per cwt.	4 0	—
Leeks, per doz.	5 0	—	Turnip Tops, per bus.	2 6	—
Lettuce, Cabbage and Cos, per doz.	0 6	1 0	Vegetable Marrows, per doz.	4 0	12 0
Mushrooms, per lb.	0 7	10 0	Watercress, per doz.	0 6	0 8
Buttons	1 0	—			

REMARKS.—Supplies of Nova Scotian Apples are almost exhausted. The Tasmanian and Australian shipments to hand this week comprised about 30,000 boxes of Apples and 600 cases of Pears, Grapes, and other fruits. Certain English hot-house fruits are available, including Black Hamburgh and Muscat of Alexandria Grapes, Figs, Peaches, Melons, Raspberries and Strawberries. A number of forced vegetables can be obtained, notably Beans, Tomatoes, Cucumbers, Peas, Mushrooms and Vegetable Marrows. Asparagus is being received from Worcester, Cambridge, Norfolk, Devon and Middlesex in fair quantities. Teneriffe Tomatoes are fairly plentiful. The supply of outdoor vegetables is somewhat limited. E. H. R., Covent Garden Market, May 10, 1916.

Potatoes.

	s.d.	s.d.		s.d.	s.d.
Blackland	7 6	8 0	Lincoln,—con.		
Dunbar	11 0	12 0	— Evergood	8 0	9 0
Kent:—			— King Edward	9 0	10 6
— Eclipse	8 6	9 6	— Queen	8 0	9 6
— King Edward	9 0	10 0	Scotch:—		
Lincoln:—			— King Edward	9 0	10 0
— Main Crop	8 6	10 0	New:—		
— Eclipse	8 0	9 6	— Spanish, cwt.	19 0	21 0

REMARKS.—Trade is slow, and prices remain about the same as last week. Few consignments are reaching the market, but supplies are quite equal to the demand. Edward J. Neuburn, Covent Garden and St. Pancras, May 10, 1916.

ANSWERS TO CORRESPONDENTS.

BOOK: W. A. B. *Elementary Botany*, by E. Drabbe, price 2s. 10d., post free, from our Publishing Department.

CORRECTION.—Page 246, line 14.—For 75° F. read 57° F.

DAFFODIL: H. G. S. The Daffodil with five flowers on a stem is an interesting instance of fasciation—a condition in which several stems have coalesced. Fasciation is believed to be usually caused by excessive vigour, and it is frequently seen in heavily-manured Asparagus. It is not so common in Narcissus, but, nevertheless, cases occur from time to time, and instances are mentioned in the late Dr. Masters' work, *Vegetable Teratology*, published in 1869.

LUPINUS: G. We know of no general monograph of the genus Lupinus, but there is a series of papers by A. A. Heller on "The North American Lupines" in an American periodical entitled *Muhlenbergia*, vols. vi-viii, 1910-1912, with numerous figures in the text.

NAMES OF FRUITS: J. T. Apple Roi d'Angleterre.

NAMES OF PLANTS: S. W. Lithospermum purpureo-coeruleum.—F. A. E. Eriobotrya (Photinia) japonica, Loquat.—E. Wilson. Periploca graeca.—A. B. H. Pachysandra procumbens (Alleghany Mountain Spurge).

ODONTOGLOSSUM SPIKES INJURED: D. M. From the appearance of the spikes we fear that the house in which they have been grown has been imperfectly and irregularly ventilated. Opening the ventilators wide during cold weather or when cold winds prevail would cause a check and injury to the plants similar to that shown in the specimens. On the contrary, by keeping the ventilators closed and the atmosphere excessively moist, moisture is made to condense on the plants, and this would cause damage to the young flower-spikes. The plants, pots and staging should be carefully cleansed and the damaged growth removed. Ventilate carefully, and leave the bottom apertures open night and day. Spray with clear water freely in the cool house and also in the Cattleya house (in which you suggest that over-watering may have caused some of the leaves to turn yellow), and do not water the roots so freely. Use rainwater, or, if service water, take means to soften it. Where labour is short it is advisable to shade the houses in which these plants are growing.

OXALIS IN AUSTRALIA: F. G. There are two species of Oxalis which are natives of Australia, namely, O. Magellanica and O. corniculata, both described in Bentham's *Flora Australiensis* and local Australian "Floras." The first is very similar to the British O. acetosella, and is found in the mountains of Victoria and Tasmania. It also inhabits New Zealand and southern South America. O. corniculata, a species with yellow flowers, is widely distributed in temperate and tropical countries; often naturalised, as in the West of England.

PRICES OF TIMBER: F. D. A. From information just received, the average price of Larch is 10d., and of Scots Pine 9d., per cubic foot throughout England. Needless to say, the value of any given timber would depend upon size and quality, distance from a loading station, and the condition of the roads.

SOUTH AFRICAN PLANT: F. G. It is difficult to name a plant from a popular description, but your West African shrub is probably a member of the Guttiferæ (Clusiaceæ), to which "skins of countless stamens" point, and possibly a species of Garcinia. But these are mere guesses.

Communications Received.—H. J. Elwes—E. Mottishaw—Mack and Min—Dr. D.—A. C. B.—A. C. L. Caltha—J. H. D.—U.S.A.—W. F. R.—C. H. P.—W. C.—Correspondent, Norway—G. C. W.—L. C.—W. H. D.—T.—J. R.—J. S.—C. L.—C. T.—Cestrian—H. S. B.—F. A. E.—T. W.—W. E.—T. C.

THE
Gardeners' Chronicle
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NOTES FROM A COTSWOLD GARDEN.—VII.

WHEN I wrote my last notes I said that it looked like a rather late season instead of an early one, as it promised, in February; now again, owing to the warm, sunny weather of the last week in April, everything has come on with a rush, and a lot of rain in the first week of May has brought out more flowers than I have ever seen so early here. Among the many I will mention a few which are unusually good this season. The American Erythroniums have been specially fine under a north wall where they get no sun till April. They are well mulched with leaf-mould, and replanted about every three years, when the bulbs get crowded. These plants seem to grow equally well in Cornwall, where I have seen them very vigorous in Captain Pinwill's garden, and at Dawyck, in Peebles-shire, where the winters are long and severe. There are many more names than species, and I can only distinguish four from the Pacific Coast and Rocky Mountains, besides what seem to be colour varieties rather than distinct species. Of these the first and least desirable is a green-leaved plant with golden-yellow flowers, which open almost before they are above ground and fade very quickly; the stem carries three or four flowers, and rapidly lengthens after the flowers have dropped, attaining 18 inches or more in height. This may be the plant figured in *Bot. Reg.*, t. 1,786, as *E. grandiflorum* of Pursh, but is more generally known as *E. Nuttallianum*. The next, and to my mind the best, is the one figured in *Bot. Mag.*, t. 5,714, as *E. giganteum* of Lindley, which Baker would certainly never have considered a variety of the last if he had seen the two growing together. The leaves are beautifully

blotched with purple and a creamy-white or pale sulphur flower with a large yellow blotch at the base of the segments. The flower-spike branches and bears three to five or more flowers when the bulb is strong. What are sold as White Beauty and Pink Beauty are, I think, only fine forms of this; and though the leaves of *E. revolutum* are usually paler, I cannot see any ground for separating it as a species. *E. Smithii*, from Vancouver Island, is a pink-flowered variety, and *E. Johnsonii* a purple one with similar foliage and habit.



FIG. 111.—NOTHOLIRION MACROPHYLLUM
AT COLESBORNE.

E. Hendersonii, S. Wats, figured in *Bot. Mag.*, t. 7,017, is a lilac-flowered species with green leaves. It does not do well on my soil. *E. Howellii*, also from Oregon, I have not seen in cultivation. *E. Hartwegii*, S. Wats, from the Sierra Nevada of California, which is figured in *Bot. Mag.*, t. 7,583, is a very distinct species, having blotched leaves which are narrower and more folded than those of *E. giganteum*, with numerous flowers on long foot-stalks which separate from the main stem close to the ground; a character by

which it is easy to distinguish it from *giganteum*. The colour is white or pale yellow, becoming much deeper towards the base. By the side of these neither of the eastern United States species, *americanum* or *albidum*, is worth growing, except as a curiosity. The king of the genus, *E. sibiricum*, is, I fear, impossible in English gardens. This, though usually classified as a variety of *Dens-canis*—a species which will not live on my limy soil—is a glorious plant as I saw it in the swampy forests of the lower Altai Mountains in May, 1899, and along the Siberian Railway in the forest at the south end of Lake Baikal, on my return from China. It came up in masses as soon as the snow was off the ground, and produced flowers on stems over a foot high. I have seen it in a much less vigorous condition in the Botanic Gardens at St. Petersburg, whence I have received bulbs more than once; but though I have planted them in the shadiest and coldest place I can find, close under a north wall, the flowers, which develop underground, try to come out prematurely and never open properly. It might do better in the north of Scotland.

I have always wondered why the plant known as *Lilium roseum*, Wall (figured in *Bot. Mag.*, t. 4,725), or as *Fritillaria Thompsoniana*, Don, is not more generally grown, for in my Alpine house at the present moment it is one of the best plants in flower, as fig. 111 will show. Its bulbs, leaves, and habit are so unlike those of any Lily or Fritillary that I prefer to call it by Wallich's name of *Notholirion macrophyllum*. It is not quite hardy here, as the leaves grow too early; and unless the small bulbils which form under the hard, brown coat of the bulb are removed in time, so as to allow the bulb to become strong as it ripens, it does not often flower; but in a frame it increases fast, and requires no other care than a rich soil and plenty of air. It grows in the Himalayas from Afghanistan to Nepal, but in Sikkim is represented by another less beautiful plant, described by Baker as *L. (Notholirion) Hookeri*, which is figured in *Bot. Mag.*, t. 6,385 as *Fritillaria Hookeri*, from a plant which I collected in Sikkim in 1876.

The earliest Paeony to flower here this year is *P. Mlokosevitchii*, a Caucasian species, which is very near *P. Wittmanniana*, as Dr. Stapf said under *Bot. Mag.*, t. 8,173, but has more pubescent and robust foliage, and flowers a few days earlier. The stigmas are of two colours, and the filaments also differ in colour. A pure white-flowered Paeony, which I got from Holland as a form of *Wittmanniana*, but which may be a colour variety of *Mlokosevitchii*, is a finer plant than either. Another fine Paeony, flowering for the first time with me, is *P. Cambesidesii*, from Majorca, whence it was brought to Ireland by Miss Geoghegan. It has a large pink flower and dark green foliage which on the underside is reddish-purple; it seems hardy enough here, which is not the case with most plants from the Balearic Islands. The only Paeony which

has suffered much from the winter is the Himalayan *P. Emodi*, whose foliage comes up too early to suit our spring.

A *Paeony* which I raised from seed sent me as *P. anomala* by Miss Willmott has just flowered, and will be described and figured in the July part of *Bot. Mag.* as *P. Willmottia*. It has a pure white flower and very distinct bronze-coloured leaves. No more beautiful *Paeony* exists, and though very early it is quite hardy.

A really wonderful flower has just opened on a plant of *Iris iberica ochracea*, which I got in 1914 from Mr. Wallace, and have grown in a pot in a cold frame ever since. I always thought *I. iberica* the most beautiful *Iris* in cultivation, but have found it hopeless to keep until now. Whether this form of it will succeed in the open ground I do not know; but to expose such a large, lovely, and delicate flower to the pelting rains we have had lately would be as wrong as to put a *Cattleya* outside, for no *Cattleya*, to my eye, is more beautiful than is this *Iris*. Another gem in this genus, just out in the Alpine house, which for the same reason ought to be grown under glass, is *Iris tectorum alba*, a plant of neat, compact habit with a very large pure white flower. *Iris montana*, which I always grew as *Tomieana* until Mr. Dykes taught us better, is perhaps the best *Iris* which is out in the border; it evidently has a good constitution and is very floriferous.

The Tulips which a week ago gave promise of a very good show have been terribly knocked about by rain and wind, and it seems to me that in such weather as we usually get in April and May it is not much use to grow them unless one has an awning to protect them. I did not plant till late in November in the hope of retarding them; but it is no use trying to keep things back when they want to grow. *T. saxatilis*, however, now flowering among the roots of shrubs on a wall, stands the weather wonderfully, and many other forgotten Tulips whose bulbs have got under hungry shrub-roots flower better than those which have been lifted and planted in prepared beds of good soil. *H. J. Elwes*.

PENTSTEMONS: THEIR VALUE IN THE GARDEN.

(Continued from p. 254.)

PLANTING OUT.

THE sites intended for planting with *Pentstemons* should have received some little care in the preparation, for *Pentstemons* always respond to generous treatment, although at the same time they are not by any means fastidious. If beds containing *Roses* or other plants are intended for their reception, they will have been manured and dug in the usual way, and will not need much further treatment. If, however, the soil is heavy, it will be a great advantage to add a good dressing of some lightening material, such as ash from the burning of garden rubbish and prunings. Old potting soil is also excellent for the purpose. These materials should be spread on the beds and lightly forked in, breaking all lumps and getting the soil in a fine condition, which will facilitate good planting, and the use of the hoe afterwards. Ground which is vacant should be dug deeply, incorporating a good dressing of well-decayed manure. This should have been done some time prior to planting; if during the previous autumn so much the better, especially in the case of retentive and heavy soils, which will then by the spring settle down much better. If manure is scarce, a heavy dressing of half-decayed leaves will be of service.

Before planting out begins, careful notes should have been made as to the positions of the different varieties, which will, of course, be in their separate kinds in the frames. These matters

being decided, a batch of plants may be lifted. This should be done carefully, using a handfork for the purpose, and taking up each plant with a good ball of soil, so as to secure all the roots possible. The advantage of having sufficient room between the plants will now be seen. The planting should be carried out with as little delay as possible, and the plants not left out of the ground too long. Allow a distance of 12 to 18 inches between the plants, with the exception of a few smaller-growing varieties, which may be planted more closely. In planting make a hole with the trowel of sufficient size and depth to accommodate the ball easily, afterwards working the soil around it and pressing with the hands. As the planting proceeds give a good watering, to settle the soil about the roots, and so secure a good start. This watering should be done from the spout of the can without the rose, giving sufficient to each plant to wash the soil down about the roots. If the plants are taken up carefully and watered in after planting, they usually transplant very well, scarcely flag at all, and soon become established.

AFTER CULTIVATION.

The first attention *Pentstemons* should receive after planting consists of the use of the Dutch hoe between the plants. This should be done as soon after planting as the soil begins to get dry on the surface. This will be especially valuable should the season be dry, as it conserves the moisture in the soil. During long spells of hot, dry weather a good watering will occasionally be very helpful to the plants, as they like plenty of moisture while growing freely; but do not commit the error of giving insufficient quantities at frequent intervals. This is a mistake often made by those who do not understand the art of watering. The frequent moistening of the surface soil tends to attract roots to the top, where between the waterings they get dried up by the sun. When watering is necessary do it thoroughly, and do not hurry over the work, but go over the ground several times, to allow the water to soak deeply into the soil, using a can with a coarse rose, or no rose at all. After a heavy watering such as this the soil may, of course, become caked on the surface; therefore, as soon as it gets slightly dry again use the hoe, and continue the use of it frequently. The hoeing will preserve a layer of loose, dry soil, which in its turn will keep the under soil moist for a considerable time. Another method of keeping the soil moist and cool during hot seasons is to give the beds or borders a mulch of some short material, such as partially decayed manure, leaves, or peat-moss. Mulchings are, however, objected to by some people, on account of appearance. In this case the best method is that of frequent hoeing and occasional watering, as described. Of staking, which takes up so much time in the case of the occupants of beds and borders, *Pentstemons* require little, if any, the flower-stems growing up straight and stiff. If the plants grow fairly tall, however, a small stake may be necessary, especially if growing in a position where strong winds might break them down. The stake need not be as high as the top of the flowers, but just sufficient to secure the main stem without being seen. Generally speaking, the plants are found to require no support in this way.

SELECTION OF VARIETIES.

There are now a great number of florists' varieties, and these are continually being added to, so that anyone may continue to increase his collection. Many of the varieties have been in use for a considerable time, and are sufficiently good to hold their own against all comers. The short list here given contains some of the best sorts grown, and will be found, I think, sufficient to enable anyone who wishes to do so to form a small collection.

White and Pale Shades.

- Nobility.—White, a small-flowered variety.
- Marconi.—White, with red spots and markings and pink edge.
- Miss Annie Shlayer.—A good white variety.
- George Bizet.—Pinkish-white.
- Laonnes.—Pink, with white margin, large flowers.
- Loré Volterer.—Pale rose-pink; a beautiful variety.
- Marcel Dubois.—Blush, with pink margin.
- Edna Earl.—Rose-pink with dark red blotches, prettily pencilled.
- Jane Dieulafoy.—Pinkish-white, very large.
- H. Spencer.—Pink, with maroon markings.

Scarlet, Crimson and Carmine Shades.

- George Home.—Scarlet, white throat; very large flowers.
- Carrie.—Scarlet, with darker blotches.
- Mrs. Bunn.—Light scarlet, white throat, and crimson marking.
- Antonin Breguet.—Carmine, white throat; large flowers.
- Le Prophète.—Carmine, white throat.
- James Thompson.—Bright scarlet, white throat; fine.
- Candidate.—Scarlet-carmine, throat white.
- Newburgh Gem.—A distinct variety, dwarf and bushy, with a profusion of scarlet flowers on many stems.
- André Lebon.—Bright crimson, white throat.
- President Carnot.—Crimson, white throat, and very large flowers.
- Henry Lechambre.—Crimson, white throat.
- Albert de Kahlker.—Crimson, white throat, and dark marking.

Mauve, Magenta and Purple Shades.

- Congo.—Pale purple.
- Lord Newlands.—Mauve, prettily marked.
- Miss Bertha Pliss.—Pale mauve, white throat.
- Archibald Forbes.—Magenta, white throat; large flowers.
- Grace Darling.—Purple, white throat; large flowers.
- Helen Wood.—Bright purple, white throat.
- King of *Pentstemons*.—Deep purple, white throat; prettily marked.
- Mrs. Nixon.—Deep purple, white throat; large flowers.

THE SPECIES.

Of these there is a considerable number, though few are grown to any extent. Several are very interesting and beautiful plants, and well worthy of a place in the herbaceous collection. Those given here are all quite hardy, but a few of them sometimes succumb to the excessive wet of our winters; the cold does not harm them. They may be saved from this by fixing sheets of glass in such manner that most of the rain runs off. They may be readily increased by division, as in the case of other herbaceous plants, or by cuttings. Seed may also be saved and sown, but they will be found to vary a good deal. The following are among the best of the species:—

- P. antirrhinoides*.—Flowers small, pale yellow, height about 18 inches, bushy habit.
- P. azureus*.—Flowers blue, with purple tint at base of the tube, height about a foot.
- P. barbatus*, sometimes known as *Chelone barbata*.—This plant is well worth growing; flowers vary from pink to carmine, produced freely on numerous stems, height about 3 feet; a very pretty and graceful plant.
- P. gracilis*.—Flowers pale purple or lilac, height 12 inches or less; a very pretty plant for front of borders.
- P. Hartwegii*.—Flowers crimson or scarlet, about 2 feet high; a showy species; one of the parents of the varieties.
- P. heterophyllus*.—Flowers pink or purplish, height about 18 inches.
- P. spectabilis*.—Flowers purple in a loose panicle, 2 feet.

P. puniceus.—Bright red flowers, on stems 3 feet or more in height.

P. rotundifolius.—Flowers bright red, height 2 feet; a good species.

P. secundiflorus.—Flowers blue, with bronzy shade on upper part, height about 18 inches. *S. Ashmore*.

(To be concluded.)

LEAF-SPOT ON VINES.

THE first visible indication of the Vine disease known as leaf-spot is the appearance of small semi-transparent spots on the leaves, which gradually increase in size and turn brown, until finally the whole leaf is involved, when in most cases the blade separates from the petiole at the point where these two parts meet, leaving the petiole still attached to the wood. The disease spreads in time more or less over the whole Vine, when in bad cases most of the leaves die and fall off, while the Vine is heavily taxed in supporting the fruit during its second swelling. The leaves near the rod are generally first attacked, rapidly turn brown, and fall off in the manner indicated, the fruit shrivels, and growth is checked for the rest of the season; under these conditions it is impossible for the Vine to succeed. In other cases of less intensity the disease appears later in the season, with the same result as mentioned above, as regards the leaves, but with less damage to the Vine.

In gardens where the disease is bad it is a serious matter, as it prevents the white Muscat being grown at all satisfactorily, the disease appearing in June or early July, at the time when plenty of good, healthy foliage is indispensable to the well-being of the Vine and its fruit. So far as my personal experience and information go, it is only on soils of the magnesium limestone formation that the Vines are subject to this particular disease. It would be interesting, however, to know whether Vines growing in soils from other formations are subject to the disease.

From the records of various investigations made by adding a known quantity of boric acid to a known quantity of soil, sand, or water, and further, from my own analyses of soils of known quality for Vine growing, it seems highly probable that the trouble arises from an over supply of soluble boron compounds in the soil, although they are present in the soil water in exceedingly small quantities.

Dr. Brechley, in her experiments with barley in 1910-1911, at Rothamsted, found that when boric acid was added to the water cultures in the ratio of one part of acid to 2,500,000 parts of water, some trace of discoloration was observed within a week, those with higher concentrations already having the upper parts of the leaves spotted, and very brown at the tips. This browning was first seen at the tips of the leaves, and then spread downwards as brown spots, which coalesced, until finally the whole leaf was involved. The other leaves from below upwards were affected at a later stage in the higher strengths of boric acid, the mode of progression of the poisoning action being always the same; the action of the greater strengths of the poison is well marked in the leaves, which tend to become brown, and to die in a characteristic manner.

E. Hotter's (1890) extensive water culture investigations with Maize and Peas led him to conclude that boron does not produce general damage to plants as a whole, but only causes discoloured (bleached) patches on leaves. Traces of boron do not damage plants, but larger amounts destroy the chlorophyll and cause local cessation of assimilation and death of roots. The intensity of the effect increases with the amount of boron in the nutrient solution.

Haselhoff (1911-1913), in water and soil cultures with Maize, Beans, and Oats, got charac-

teristic spotting of leaves, with very small amounts of boron, even before any detrimental effect on plant growth could be detected. The lower limit of damage in water cultures was perhaps one milligram of boron per litre; with Beans, this amount given as borax caused increased growth, although the appearance of plants suggested damage.

In soil cultures one milligram of boron per 8 kilograms of soil (0.00001 per cent. of boron) in soil, did not damage Beans if given as borax, but did if given as boric acid. Larger amounts were detrimental in either form. The upper limit for favourable influence, if any, must be below 0.00001 per cent. of boron in the soil.

My own investigations are confined to the analytical side of the question. I have examined soils in which Vines suffering from leaf spot are growing, and the boric acid found in the soil solution is in close agreement with the quantity Dr. Brechley and Haselhoff found in their experiments to be injurious to plants. In the case of Barley, Dr. Brechley found that one part of boric acid in 2,500,000 parts of water showed signs of discoloration, and Haselhoff suggests 0.00001 per cent. of boron in the soil as the upper limit.



FIG. 112.—BLUE DENDROBIUM (*D. VICTORIA REGINA*) AT THE SALE OF THE BURFORD COLLECTION.

In one case I found the soil solution to contain one part of boric acid in 961,000 parts of water, in another one part of boric acid in 2,083,000 parts of water, or, when expressed as per cent. of boron in soil, the first = 0.000056 per cent. of boron, and the second = 0.0000256 per cent. of boron in the soil. In the former case the leaves are affected comparatively early in the season, the leaves falling in July and August; in the latter case, about six or eight weeks later; the leaves turn brown and fall, thus preventing any further development of either Vine or fruit.

Dr. Brechley and other investigators have proved that boric acid in solution above a certain concentration is toxic to plants, the toxicity varying according to the variety of plant. When comparing my own figures and observations with those already named, it appears to me that boron is, in all probability, the fundamental cause of the disease.

This is only a preliminary note. I am not prepared to suggest remedies, but I hope to get further information in due course. Meantime, I should greatly appreciate notes on the experience of other Vine growers with this particular disease, which is certainly something to be prevented or cured, if either is proved to be possible. *W. H. Dobson*.

ORCHID NOTES AND CLEANINGS.

SALE OF THE BURFORD COLLECTION.

IT will be remembered that in accordance with the wishes of the late Sir Trevor Lawrence a portion of his collection of Orchids, amounting to 580 specimens, belonging to 89 genera and representing 350 species, was presented to the Royal Gardens, Kew, and that other distributions of a like nature were made (see *Gard. Chron.*, May 2, 1914, p. 301). The remainder of the collection was sold by Messrs. Protheroe and Morris on May 9, 10 and 11 by order of the executors of the late Elizabeth Lady Lawrence. The total sum realised by the three days' sale was £1,407. The plants generally realised fair prices, *Odontoglossums*, *Cattleyas*, and *Laehocattleyas* commanding most attention from buyers. *Dendrobiums*, which of late have been less popular with collectors than formerly, evoked a decided revival in interest, these plants throughout realising good prices. The less showy and "botanical" Orchids, which were largely represented, sold cheaply, among the few which realised more than £1 being *Cirrhopetalum longissimum*, 3½ guineas; three

plants of *Bulbophyllum barbigerum*, which sold for 2 guineas, £2 15s. and £1 4s. respectively, and the blue *Dendrobium Victoria Regina* (see fig. 112), 4½ guineas. In this section Col. Clarke, C.B., was a purchaser.

Cattleya Trianae Imperator was sold for 21 guineas to Mr. W. Waters Butler, who was the largest purchaser of good plants throughout the sale. A small plant of *C. Trianae Leeana* found a purchaser at 7½ guineas, *C. T. Reine des Belges* at 6 guineas, and *C. T. magnifica*, dating back to the old Dorman collection, at 4½ guineas. *C. Mendelii* Class' variety realised 8 guineas, whilst specially good forms of *Cattleyas* generally sold well, Sir Jeremiah Colman, Bart., purchasing a selection of these Orchids as well as other leading subjects.

Odontoglossums, either as single specimens or in lots of several smaller plants, were well competed for. *Odontoglossum crispum aureum* Laburnum was knocked down to Mr. Pantia Ralli for 15 guineas. *O. c. Mrs. de B. Crawshay* realised the same sum; *O. c. purpurescens* 17 guineas, *O. c. Ronald* 11 guineas, two plants of *O. c. Moonshine* 10 guineas and 11 guineas respectively, *O. c. Oakfield Sunrise* going to Mr. H. T. Pitt (the famous collector of varieties of *O. crispum* in the days when 1,000 guineas

were sometimes talked of for a plant) at 14 guineas, the same buyer getting back his rare yellow *O. grande* Pittianum on easy terms at 7½ guineas and *O. Inseayii splendens* at 6½ guineas. Many of the *Cypripediums* were of very large size, a quality which does not always enhance their value at sales. In this section the most interesting item was Lot 174, a grand plant of *Cypripedium Stonei platytaenium*, which sold for 14 guineas. The plant was bought from the Day collection for 140 guineas, and one was sold in 1887 for 200 guineas. Forms of *Laelia anceps* found ready buyers, instances being *L. anceps Veitchii*, with 14 pseudo-bulbs, 6½ guineas, the same, with 8 pseudo-bulbs, 5 guineas, and *L. anceps Leeana*, 3½ guineas.

The hybrids, some of which were raised at Burford, were chiefly sold in lots of several plants, and prices were good, the Burford-raised *Brasso-Laelio-Cattleya Triune*, of which there was a good supply, being favourites. Lot 56, *Sophro-Laelio-Cattleya hetchleyflora*, a scarlet hybrid recently noted in these pages, realised 11 guineas, and *Sophro-Laelia Gratrixiae* 4½ guineas.

NOTICES OF BOOKS.

THE CHERRIES OF JAPAN.*

ONE of Mr. Wilson's special objects during his travels in Japan was to make a thorough study of the Cherries of that country. The results he has now embodied in a work just issued by the Arnold Arboretum, entitled *The Cherries of Japan*. It consists of eighty-two pages of letterpress, embellished by eight half-tone plates. To cultivators of ornamental flowering trees in the British Isles this work will make a special appeal, for the Japanese Cherries form a group of great and increasing importance in gardens. At the end of April and early in May they make probably their most beautiful pictures.

According to Mr. Wilson's computation, the *Cerasus* section of *Prunus* is represented in Japan by ten species. Of these five or six are in cultivation in this country.

The most interesting results of his researches are those concerning the popular double Cherries long known with us as *P. Pseudocerasus*, *P. serrulata*, and *P. Watereri* (or *P. Sieboldii*). For many years they were all made varieties of *P. Pseudocerasus*. A few years ago, after examining Lindley's type specimen of *P. Pseudocerasus*, now preserved at Cambridge, I came to the conclusion that the true plant to which the name belonged was not then in cultivation here. Mr. Wilson agrees with this, but observes that he introduced seeds in 1907 and 1910 from China. He is doubtful, however, if it is now in existence in either European or American gardens, and thinks it may not be hardy. It has a red fruit, and appears to be a native of China only.

Prunus Pseudocerasus being therefore eliminated, so far as trees in our gardens are concerned, the double-flowered Japanese Cherries are by Mr. Wilson placed under three species, viz., *P. Sieboldii*, *P. serrulata*, and *P. lannesiana*.

P. Sieboldii (of which *P. Watereri* is a synonym) is easily distinguished by the dense velvety down with which the young leaves are entirely covered. The flowers are two inches across, soft rosy-pink. The tree is not so vigorous nor so hardy as *P. serrulata*, but is very beautiful, and has long been valued in gardens. The remainder of these Cherries are put under two species, differentiated as follows:—

P. serrulata.—Leaves glabrous, more or less glaucous beneath; teeth shortly aristate; flowers inodorous; bark chestnut-brown.

P. lannesiana.—Leaves unfolding green or slightly reddish, pale green beneath; teeth long, aristate; flower fragrant; bark pale grey.

* *The Cherries of Japan*. By E. H. Wilson. Publications of the Arnold Arboretum, No. 7. Printed at the University Press, Cambridge, Mass.

The wild forms of both these species have black fruits. The type of *P. serrulata* is the well-known Cherry, with horizontally spreading branches, and double white flowers; but of both it and *P. lannesiana* there are double and single as well as white and pink forms described. A large number of Japanese forms, probably including all those recently imported under their Japanese names to this country, are described by Mr. Wilson. Being here placed under the species to which they belong, the work will be useful to those who desire to have their trees properly named. The popular Cherry now widely known as James H. Veitch is made a form of *P. serrulata* var. *sachalinensis*, which is itself the beautiful Cherry we have hitherto known as *P. Sargentii*.

One interesting question which has previously been discussed in these pages (Oct. 16, 1915, p. 244) is here settled. This is the identity of the Cherry introduced by Mr. T. Smith from Japan, and distributed by him as *P. Miqueliana*. It created much interest when shown at the Horticultural Hall late in 1912, because of its flowering in November and December, and also because of its fragrance. Mr. Wilson makes it a variety of *Prunus subhirtella*, and calls it var. *autumnalis*. I may perhaps mention that, acting on Prof. Koehne's identification, I described this Cherry in *Trees and Shrubs Hardy in the British Isles*, ii., p. 243, as *P. microlepis*. The beautiful Cherry known for many years in gardens as *Prunus* (or *Cerasus*) *pendula* is also reduced to a variety of *P. subhirtella* as *P. s. pendula*.

Very few problems in garden botany have been more puzzling than the identity of these Japanese Cherries, chiefly through the great variability they have developed under centuries of cultivation in their native country. Mr. Wilson's work, based as it is on an exhaustive study of living material seen by him in Japan, must have a much greater authority and value than any work could have which had its foundation on dried material alone. Under each species there are given copious notes on the trees as they are seen in Japan, and these will form a most interesting part of the work to cultivators in this country. In the introduction, too, some very valuable notes are given as to cultivation and to the selection of proper stocks. To the lack of the latter the author attributes the short life and inferior vigour of many of these double-flowered Cherries. As a stock for forms of *P. serrulata* and *P. lannesiana*, he recommends the Cherry we have hitherto known as *P. Sargentii*—here called *P. serrulata* var. *sachalinensis*. It does not take root freely from cuttings, but from what I saw of some trees in the Arnold Arboretum a few years ago, laden in June with black Cherries, I should say that they alone were prolific enough to supply Europe and America with stocks in a few years' time. We find at Kew that *P. subhirtella* strikes quite well from cuttings. A considerable number of trees which, previous to the flowering of *P. serrulata*, etc., made the most attractive display in the grounds, were all raised from cuttings a few years ago. It would be worth while trying to get the whole of these Cherries on their own roots. W. J. Bean.

DOG'S TOOTH VIOLETS ON A RETAINING WALL.

LAST spring and this I have been greatly pleased with a clump of a rose-coloured Dog's Tooth Violet, a variety of *Erythronium Dens-Canis*, which was planted at the top of a retaining wall, on the level. It has thriven splendidly, and the flowers show much better when above the level of the eye than on the flat. It serves to remind one that the varieties of this well-known species have attractions that should not be overlooked. S. Arnott.

The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

BEGONIA GLOIRE DE LORRAINE.—Young plants of *Begonia Gloire de Lorraine* should be encouraged to grow freely in a house having a warm, moist atmosphere. Open the top ventilators freely during the forenoon, but close them early in the afternoon, after spraying the plants with rain-water. The earliest plants will soon be ready for their final shift. They may be potted into 7in. pots in a compost consisting of loam, leaf-mould, manure from a spent Mushroom-bed, wood-ash, and coarse sand. Insert another batch of cuttings to raise plants for flowering in 3½in. pots; they will be useful for table decorations.

FUCHSIA.—Batches of *Fuchsias* may be forced into flower as required. Unless old plants are given an abundance of stimulants when in active growth their flowering season will be a short one. Stop plants rooted this season as their requirements demand. Those intended for training along the roof-rafters should be divested of all the side growths, to cause the leading shoots to grow freely, but when the plants have attained to a desired height the side shoots may be allowed to develop. The plants must not be shaded too heavily, except when they are in flower.

HYDRANGEA HORTENSIS.—Plants of *Hydrangea hortensis* are developing their flowers, and should be fed liberally with stimulants. See that each shoot is staked securely, or the flowers will be damaged when the plants are removed. Water the blue flowered varieties with the preparation known as "Azure."

ASPIDISTRA.—These plants require attention annually, repotting those which need it. The leaves develop their best colour when the plants are grown in comparatively small pots. Large specimens may be divided, and the portions repotted in smaller receptacles. Use a rich compost, and pot very firmly. Grow the newly potted plants in a warm, moist house, and shade them during the hottest part of the day.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

PHALAENOPSIS.—Supply fresh rooting material to plants of *Phalaenopsis* that require it as soon as they have finished flowering. They may be grown in pots, pans, baskets or cylinders, and the receptacles should be three-parts filled with clean potsherds for drainage. Annual repotting is not necessary, for the plants will grow in the same soil for several years if top-dressed yearly. Remove decayed compost, and replace it with a mixture of *Osmunda*-fibre and *Sphagnum*-moss. If it is decided to repot, detach the plant carefully from the old receptacle and do not injure the roots. Remove all the old soil, spread the roots out, and work some of the compost between them, making it firm. Finish with a top-layer of clean *Sphagnum*-moss. Water the roots sparingly; if the *Sphagnum*-moss is sprayed occasionally and kept fresh and green it will afford sufficient moisture to keep the plants healthy. Shade the plants from strong sunshine. A low, span-roofed house is generally set apart for *Phalaenopsis*, but this is not necessary if only a few are grown. The plants will thrive in a shady part of any warm, moist house, such as the plant-stove or East Indian house. The temperature during the summer months should range between 70° and 80°; in hot weather it may be allowed to rise higher provided due attention be paid to ventilating and damping. In winter a temperature of 60° to 65° will suffice. The ventilators should only be partially opened, but not when the weather is cold, for chills are harmful. Direct currents of air should never pass over the plants, for they are too drying. Some houses are always more or less damp, and in these a little top ventilation may be permitted at night, provided the necessary temperature be main-

tained. Proper ventilation will allow superfluous moisture to escape, and promote correct growing conditions; and the plants will be less liable to develop black spot disease. Watering is an important detail, and although the roots of *Phalaenopsis* must never be absolutely dry an excess of moisture should be guarded against. If the soil becomes thoroughly saturated and remains wet for a considerable time the roots will perish and the leaves turn yellow. Strong plants produce fine sprays of bloom, but the latter should be cut before the lower leaves show signs of shrivelling. Small plants will also flower; in their case the spike should be pinched out directly it is seen. Sometimes another scape develops, and in this instance it is best to allow one or two flower-buds to open. A spike may emerge from the centre of the growth, and this, if allowed to remain, would retard the growth of the plant for several weeks. The leaves must be kept free from dirt and dust. Few insects trouble *Phalaenopsis*; cockroaches and slugs must be exterminated, the former pest being destroyed by beetle poison, the latter trapped with green leaves, such as Lettuce, or searched for at night with a strong light and destroyed.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

VINE MILDEW.—Mildew is one of the worst pests the Grape grower has to contend with, but vines that have received good treatment seldom show signs of the disease. Unsuitable vineries, changes of management, and careless ventilation during the early stages of forcing are amongst the chief causes which directly contribute to its development. The fact that mildew is most prevalent in late vineries is often due to not using fire-heat, although I do not advocate resorting to the hot-water system when sun-heat is sufficient for the purpose. But the weather changes suddenly in our climate, and sufficient heat to maintain the necessary temperatures should always be available. Prevention of mildew is often easy, but not its cure, as the fungus spreads rapidly.

THE ORCHARD HOUSE.—The late spring has given general satisfaction to hardy fruit growers, and has also been equally favourable to those in charge of unheated orchard houses, for the trees blossomed late and there have been no frosts to injure them. Watch the trees closely for insect pests, and when the latest are past the flowering stage, fumigate the house if necessary. If aphids show signs of spreading, the more forward trees may be syringed carefully with a weak insecticide. Another important operation after the fruits are set is to syringe the trees vigorously with tepid soft water to cleanse the foliage. The syringing should be done on fine days after closing the house. Let the roots have liberal supplies of tepid water until the fruits are nearly ripe. Top-dressing and feeding are important details in the case of pot trees, but the use of rich nitrogenous foods often results in an excess of foliage and tends to sour the soil; choose a concentrated stimulant that will help to swell the fruits and form firm, short-jointed shoots. A full crop of good fruit is of greater importance than earliness, therefore ventilate the house liberally on all favourable occasions. Whenever the temperature commences to rise on fine mornings open the top ventilators, and afterwards the front ventilators, increasing the amount of air gradually until a maximum temperature of 75° to 80° is attained with full air. Gradually reduce the amount of ventilation, and eventually close the house entirely for the afternoon syringing. As soon as all the fruits are thoroughly set, commence the work of thinning and disbudding. In stopping the shoots, take into consideration the size of the tree and the space available for its spreading. Pinch the lateral shoots at about the third or fourth leaf to produce fruit spurs, and remove the points of other strong shoots, but allow the leading branches to grow where there is room for extension. In thinning the fruits it is wise to retain enough and to spare at the first operation, but all inferior ones should be removed at once. In the case of Pears and Apples, whenever it can be determined

which fruits appear most likely to take the lead all others should be removed forthwith; later the number may be reduced to one on each spur. These trees, with Plums and Cherries, are subject to infestations of weevils, and a sharp look-out must be kept for these pests. Fumigate the house lightly on two or three occasions, for the destruction of green fly.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES, Gardener to Major HOARE, Ellisfield Manor, Basingstoke, Hampshire.

SUPPORTING SWEET PEAS.—Sweet Peas planted out in April should have the supports placed in position. Nothing is better for the purpose than long, well-branched Hazel sticks driven well into the ground with the tops kept out as far apart as the bottoms. If the plants are to be disbudded and trained as single, double or triple cordons, long, straight Bamboo or Hazel sticks are necessary for training. The exhibition growers adopt this method, and it is to be recommended to those who have to furnish high-quality cut blooms for decorations. The first growths of the Sweet Pea should be cut out entirely to give place for the more vigorous growths which are fast pushing out from the base.

TALL PLANTS FOR BEDDING.—Although standard and other tall plants are scarcely likely to be used so extensively for bedding this year as in normal times there can be little fear that they will lose their popularity permanently. They entail much labour in growing and training, but this is abundantly repaid by the enhanced beauty of the beds, for a bed or border filled only with dwarf plants appears formal and monotonous, nor does it display its beauty at a great distance. The use of tall plants ensures a greater abundance of flowers over a given area, gives a greater volume of perfume where fragrant plants are used, breaks the formality, provides an undulating appearance and advertises the beauty of the beds from afar. Such plants should be set well apart; the minimum distance should be about 6 feet. Subjects suitable for the purpose include Zonal and Ivy-leaved Pelargoniums, Marguerites, Streptosolen, Heliotrope, *Plumbago capensis*, Swainsonia, *Calceolarias* of the *amplexicaulis* type, and Fuchsias. In most cases we prefer to employ spring plants that are propagated in the previous autumn, though I have not yet been able to produce good standard Fuchsias within the year. If any of the others (except *Calceolarias* and Marguerites, which may be propagated later) are rooted as cuttings at the end of July or early in August they may be trained into tall plants by the time for bedding out. I train Ivy-leaved Pelargoniums as columns instead of as standards. Three cuttings rooted in a small pot and repotted until they are finally in a 7-inch pot, will be nearly 4 feet high in June and will afterwards grow in the beds to a height of nearly 6 feet. Such plants give a profusion of flowers; the Ivy-leaved variety *Mme. Crousse* is splendid for the purpose. These tall plants need to be secured to stout stakes driven quite 2 feet into the ground. A group of standard Heliotropes over dwarfier plants of the same kind or over blue Violas gives a pleasing effect; tall Ivy-leaved Pelargoniums over dwarfier plants of the same colour with an edging of blue *Ageratum* are also very effective.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

SALADS.—Continue to make sowings of salads. Lettuce should be sown at fortnightly intervals in rich soil. Sow Globe Beet frequently in small batches, and use the roots when they are small. From now onwards Radishes should be grown in partially shaded situations. Mustard and Cress may be sown in odd corners or in boxes. Sow Onions thickly in boxes for pulling when quite young.

BRASSICAS.—Make preparations for transplanting all kinds of seedling Brassicas immediately they are large enough for transference, as many kinds, and especially Cauliflowers, suffer harm if growth is checked. Cauliflowers should be planted in the richest soil, allowing a mini-

mum space of two feet between the plants in each direction; large varieties must be given more room than this. Small Cabbages for summer use, such as Nonpareil, may be planted rather thickly, say, about 15 inches apart, in each direction. Large varieties, such as Enfield Market, should be planted at least two feet each way. Set Brussels Sprouts two feet or more apart in each direction, and make the soil firm, for in rich, loose ground the Sprouts will grow large and loose. Autumn Broccoli may be planted in rich soil, and treated as advised for Cauliflowers. Late varieties and those intended for spring cutting should be planted in rather poor but very firm soil. Hard, sturdy plants are best capable of withstanding frost and damp. Kales that are required for spring use should be treated similarly.

ASPARAGUS.—Weed the beds and take advantage of showery weather to apply a light dressing of salt or artificial manure.

SWEDE TURNIPS.—Garden Swedes should be sown as previously advised for other Turnips. The roots are best eaten when quite young. Another sowing may be made later to furnish roots for storing in winter. The white garden Swede does not possess such a pronounced flavour as the yellow variety, which most people prefer.

TOMATOS.—Plants which are fruiting heavily should be well fed to enable them to mature the crop. The roots may be top-dressed with compost, consisting of three parts loam, one part wood ash, and a sprinkling of fertiliser. The top-dressing should be supplemented by bi-weekly applications of liquid manure from the farmyard. Remove all lateral growths and stop the leaders when sufficient trusses of fruit have set. If the plants are crowded with leaves, remove a small proportion of the foliage, but do not do this to excess, as is sometimes practised.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

YOUNG VINES.—Where the planting out of young vines from pots is contemplated a very warm and sheltered corner of a wall should be selected. An ideal spot is an angle or recess between two walls, facing south and west. If the natural soil is not suitable, a mixture of chopped turfy loam, with some lime-rubble and wood-ash, should be provided.

RASPBERRIES.—Where plantations of Raspberries were formed last autumn of small canes, the old shoots should be cut down to the ground as soon as the new basal shoots start into growth. Newly-planted Raspberries that are not allowed to fruit the first season after planting become thoroughly established in their first year, and make strong and healthy growth. They may then be allowed to carry a full crop the following season. As soon as the current season's growths are sufficiently advanced, they should be thinned to a moderate number to each clump, according to the space available for training the canes. Raspberries are gross feeders, and if the established beds were not dressed with animal manure in the winter, concentrated manure should be applied now in showery weather, and the soil afterwards hoed. During times of drought, newly-planted canes may suffer a check to growth, unless this is guarded against by watering and mulching with light strawy litter.

DESSERT CHERRIES.—The eating Cherry is one of the first fruit trees to be attacked by black aphid in the spring, for the insects usually make their appearance soon after the flowering period. Every effort should be made to destroy this pest, for it cripples the young shoots, besides rendering the fruits unpalatable by its deposits. Syringe the trees with an insecticide in the afternoons after the sun is off the trees, and if the one application is not effective in destroying all the aphides, spray again the next day, afterwards washing the trees thoroughly with clear water by means of a powerful sprayer or garden engine. Remove all gross-growing shoots before they upset the balance of the tree, and pinch at the third or fourth leaf all shoots not required for extension. Train the shoots thinly apart. More failures amongst wall fruit may be traced to overcrowding the shoots than to any other cause.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER**, 41, Wellington Street, Covent Garden, W.C.
Editors and Publisher.—Our Correspondents would oblige delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the **PUBLISHER**; and that all communications intended for publication or referring to the **Literary department**, and all plants to be named, should be directed to the **EDITORS**. The two departments, **Publishing and Editorial**, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, MAY 23—
 Roy. Hort. Soc. Show at Chelsea (3 days).
WEDNESDAY, MAY 24—
 Meeting at the Speaker's house at 5.30 p.m. in aid of R.H.S. War Horticultural Relief Fund.
WEDNESDAY, MAY 24—
 Linnean Soc. Anniversary meet. at 3 p.m.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 53.2°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, May 18 (10 a.m.): Bar. 29.8°; temp. 66.5°. Weather—Bright sunshine.

SALES FOR THE ENSUING WEEK.

TUESDAY—
 Orchids, at Protheroe and Morris' Rooms, 67 and 68, Cheapside, E.C.4, at 1.

As we have already announced, the sale of plants organised by the Royal Horticultural Society for the benefit of the Red Cross Society of Great Britain will take place in the Vincent Square Hall on June 28-29. The committee in charge of the arrangements has provided for the publication of a catalogue, which will serve for admission to the sale, and also as an interesting souvenir of a unique occasion. Invitations have been sent to gardeners to present plants, books, pictures, and horticultural sundries of value for offer at the sale. As the drawing up of the catalogue must take a certain amount of time, intending donors—and we hope that there will be many—should notify the secretary of the R.H.S. of the plants which they are prepared to give. Already both amateur and professional gardeners and the horticultural trade have responded to the appeal, but in order to make the sale a great success yet more gifts are required. We believe that Mr. Byam Shaw has generously undertaken to design the cover of the catalogue, and that there is reason to hope that Sir Owen Seaman, the Editor of *Punch*, will write a dedicatory preface in verse. We would urge our readers to do all in their power to make the sale a great financial success. This they can do by offering plants and other objects of interest, by attending the sale, buying with generous recklessness, and purchasing copies of the catalogue. The Red Cross Society is admittedly one of the best organised institutions in the world. Its work of mercy is known to all, and it has laid all gardeners under a deep and peculiar debt of gratitude by transporting with wonderful despatch and efficiency the many hundreds of parcels of seeds and plants which have been sent by the R.H.S. for planting in the grounds attached to the base hospitals and camps of our armies in Flanders.

This sale gives us all an opportunity of testifying our grateful admiration of the work of the Red Cross Society, and we hope that all gardeners will excuse the Irishism if we appeal to them to seize the opportunity with open hands.

Gardening for Women.*

The school of gardening for women established at Glynde, by the Viscountess Wolseley in 1902 has for its immediate object the training of educated women as professional gardeners. A wider purpose, however, underlies the establishment of this and other institutions of like kind which have come into existence of recent years. That purpose, implicit or avowed, is to prepare women to take a share in the long-delayed attempt to reconstitute rural life and industry in these islands. The war has demonstrated beyond all doubt that this country has failed in the past to make full use of the great abilities and reserves of power which it possesses in its womenkind. The nation formerly encouraged the women of the reserved classes to spend their lives in an artificial and elegant idleness, and it was only in exceptional cases that young women refused to conform with this foolish standard of life. The magnificent way in which British women are playing their part in the present critical times has convinced many men—hitherto sceptical—that they were indeed foolish in taking up an antagonistic attitude to women as working partners in the business of the State.

We welcome, therefore, this enthusiastic and somewhat discursive account by the founder of the work of the teaching garden at Glynde, and shall not quarrel with the author because she does not endeavour to give us a technical account of the practice of horticulture: for, as we conceive it, Lady Wolseley has a different and more distant aim, namely, to catch the attention of the healthy young woman of the educated class, to set her thinking and to project her thoughts in the direction of the land.

For our part, we are not prepared to assert that professional gardening is a career for which large numbers of women are suited. Neither—in the light of our recent history, when young women of gentle nurture are working in hospitals as cooks and housemaids, as well as nurses; when others are driving heavy motor vehicles, and others, again, are working in munitions factories—are we prepared to deny it. The women themselves ask for a "fair field and no favour," and we do not think any but the most curmudgeonly obstinate will deny it to them.

Gardening is a hard craft and one which takes the strength and skill of the ablest men. Attempts—if any there be—to teach such a craft as this swiftly and in a manner "handsome and out of the wet" will bring their own disillusionment. There are bound to be many fail-

ures among women gardeners, as, indeed, there are among men. Here we are not disposed to argue the pros and cons. The answer to the question of the suitability of gardening as an occupation for women must be solved by experiment. Wherefore we recommend cordially Lady Wolseley's book to all those who are interested in the problem of land settlement. It describes in pleasant fashion, cheerfully and enthusiastically, the work carried out by the students of the college during their first year, and although it is likely to leave the severely practical men accustomed to more strenuous exercises somewhat cold, it will, we think, touch the imagination of the young. Such a course, though at the end of it the student is not equipped to take her place in the ranks of professional gardeners, cannot but be of great and lasting benefit to every healthy young woman with a taste for outdoor life. At the worst, though it may not make her a complete gardener, it will make her a better citizen.

One word of advice we venture to offer. There are now not a few horticultural schools and colleges for women students. Why should not the authorities and the staffs of all these institutions co-operate with one another in order to advance the cause for which they are working? Of course, there are difficulties, and grave ones, in the way of such action. But nevertheless if it could be achieved it would result in great benefits to that cause. It should lead in the first place to marked improvements in curriculum, and no curriculum of which we have had experience, whether in women's or men's horticultural colleges, is by any means perfect. It should lead also to a certain division of labour and specialisation which are among the chief secrets of success in the by no means easy industry of horticulture.

WAR HORTICULTURAL RELIEF FUND.—

Mrs. LOWTHER has offered to open the Speaker's house for a public meeting in aid of the Royal Horticultural Society's War Horticultural Relief Fund, of which the Lady NORTHCOTE, C.I., is president, on Wednesday, May 24, at 5.30 p.m. The various rooms will be open to visitors that they may see the books and the beautiful pictures they contain. Admission will be free. Cards of invitation may be obtained from the Secretary of the Royal Horticultural Society.

SALTAIRE ROSE SOCIETY.—The Rose Show, which for the past thirteen years has been such a popular annual event in Saltaire Park, will not be held this year. A number of residents at Shipley Glen promoted a small exhibition last year for the benefit of local war funds, and the Saltaire Rose Society has offered to co-operate with them in any similar effort which they may decide to make this season.

MR. REGINALD FARRER.—Amongst the visitors at the R.H.S. meeting on Tuesday last was Mr. REGINALD FARRER, who has just returned from his two seasons of botanical exploration in Western Kansu and the Eastern Marches of Tibet. Our readers who have followed Mr. FARRER's interesting notes on his many excursions will be glad to know that he returns home none the worse for his temporary exile on the Eastern hills. Mr. FARRER's colleague, Mr. W. PURDOM, has remained in China, having accepted

* *In a College Garden*. By Viscountess Wolseley. Published by John Murray. London. 6s. net.

an important office under the Chinese Government in the Department of Forestry.

THE LATE MR. FOWLER'S ORCHIDS.—We understand that the Brackenhurst collection of Orchids formed by the late J. GURNEY FOWLER will be sold by auction at Brackenhurst, Pembury, near Tunbridge Wells, on or about June 21 next, unless anything intervenes to render other arrangements desirable.

SOLDIERS AS MARKET-GARDENERS.—The uncultivated allotments on Lord LINCOLNSHIRE'S Wycombe estate, belonging to between 40 and 50 holders who are now with the Forces, are to be tilled and planted by soldiers billeted in the town in their spare time. The soldiers are to be paid for their work from a fund subscribed by the public.

VACATION LAND WORKERS.—An organisation has been formed for supplying workers for fruit-picking by arrangement between the Board of Trade and those colleges and schools of the University of London which include women. The scheme covers past students, and these are asked to apply immediately to their college or to the chairman, Dr. E. N. THOMAS, Bedford College, Regent's Park, marking communications in all cases "Women on the Land."

"HUGHES FOR REMEMBRANCE."—A correspondent, who should perhaps have addressed his communication to Bouverie Street, suggests that the Royal Horticultural Society should endeavour to secure the services of the Prime Minister of the Australian Commonwealth in its forthcoming Red Cross Sale of Plants. He believes that a large sum of money might be obtained if that gentleman would undertake to plant trees—"Yews," of course—in the gardens of the highest bidders for the favour. Such trees would in time to come be a memorial of the Minister and of his spirited ministrations to a sick country.

WAR ITEM.—Ten thousand pounds have been added to the Agricultural Relief of Allies Fund within five weeks as the result of gift sales in farming centres. Two sales alone accounted for half this amount—those at Cambridge and Reading each producing £2,500 for the Fund inaugurated by the Royal Agricultural Society. Other towns in which such sales have been held, and the amount expected to be raised are:—Mansfield, £1,010 (half share); Winchester, £900; Leamington, £750; Lincoln Bull Sale, £650; and Guildford, £1,500; making, with the Cambridge and Reading amounts, £9,310.

EXEMPTION CLAIM FOR LORD MILNER'S GARDENER.—The Blean Rural Tribunal on the 10th inst. refused the application of Lord MILNER for the exemption of PHILIP BOOTON, his head gardener at Sturry Court. In his application Lord MILNER stated that four of his five gardeners were now in the Army, including one who was a prisoner in Germany. Booton was the only skilled gardener he had left, and he was unable to get a substitute. The gardens were not merely pleasure grounds, but produced an appreciable amount of necessary foodstuffs. He considered that Booton, a married man with two children, should be exempt from military service, and further contended that the man was not physically fit. The Tribunal rejected the application, deciding that the question of physical fitness must be left to the military doctors.

PUBLICATIONS RECEIVED.—*Modes of Research in Genetics.* By Raymond Pearl. (New York: the Macmillan Co.) Price 5s. 6d. net.—*The Garden Blue-Book.* A manual of the perennial garden. By Leicester Bodine Holland. (London: *The Field and Queen* [Horace Cox], Ltd.) Price 15s. net.—*Plants in Health and Disease*, being an abstract of a course of lectures delivered in the University of Manchester. By F. E. Weiss, D.Sc., A. D. Imms, M.A., D.Sc., and W. Robinson, M.Sc. (Manchester, at the University Press, 12, Lune Grove, Oxford Road.) Price 1s. 6d. net.

STREPTOCARPUS DENTICULATA.

This is one of the most curious and interesting of the species, though it is not so beautiful as some of them. It is especially interesting on account of the much-wrinkled leaf—or, strictly speaking, the one developed cotyledon, for the

pusilla, from which, however, it differs in the nearly or quite glabrous leaf. From this species, too, it differs in the shorter corolla tube and larger limb. The tube is constricted in the middle, and its shape is very much that of the pitcher of *Nepenthes ventricosa*. A conspicuous feature may be noted in the dense glandular pubescence of the inflorescence, which is greatly

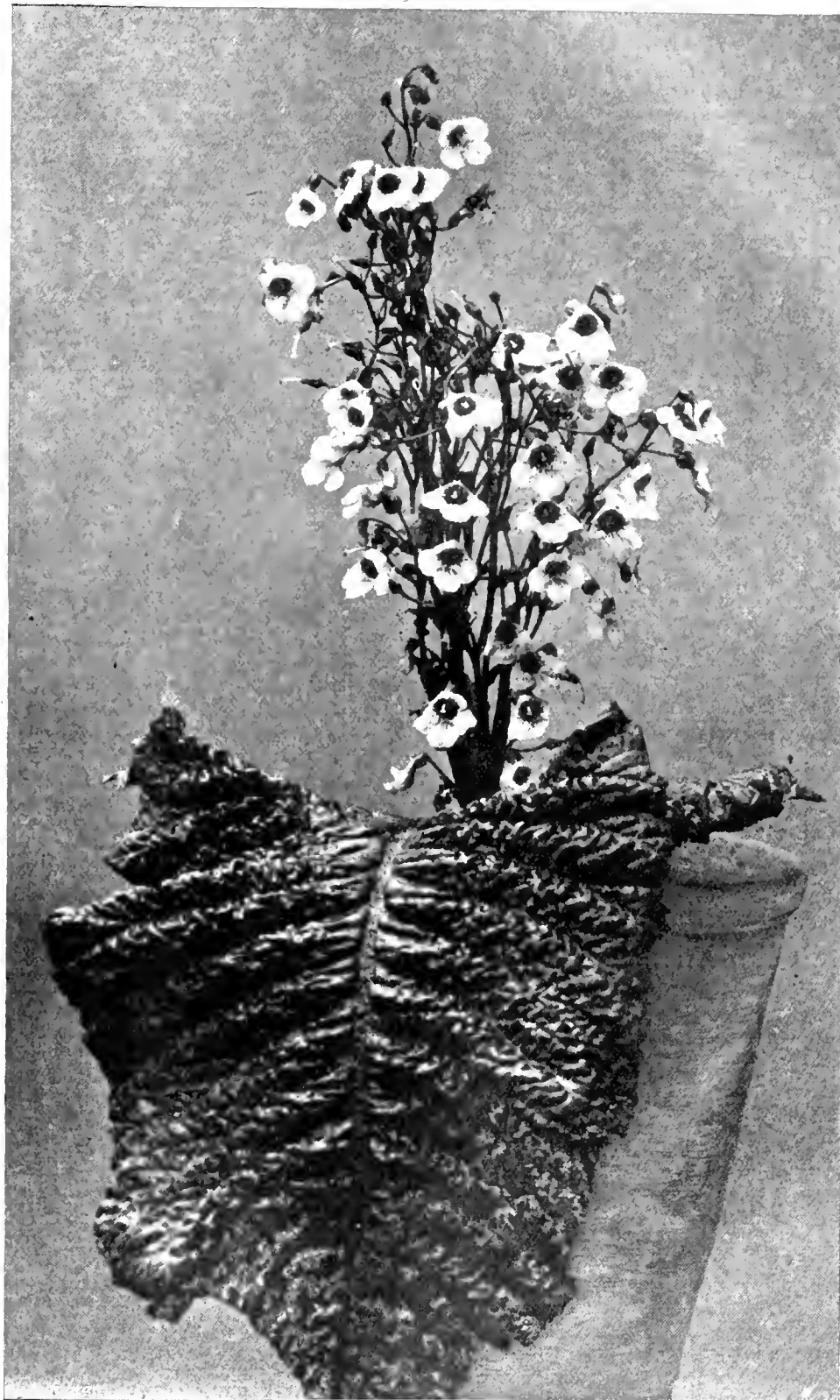


FIG. 113.—STREPTOCARPUS DENTICULATA.

plant has no leaf—and in this wrinkling it somewhat recalls the Savoy Cabbage. Moreover, owing, as it were, to too much material, the leaf, when fully developed, may be deeply undulated. It belongs to the unifoliate section of the genus, and is most nearly allied to *S.*

in contrast with the smoothness of the leaf surface. The first flowers are produced very low down, and there the inflorescence forks. The specimen before me is twice forked, and the corresponding divisions are equal. The corolla is dull rosy-purple in colour, with very dark eye,

and in this sombre appearance it is distinct. The cotyledon is ovate, about 8 inches long, with denticulate margin; inflorescences closely clustered; the calyx (and even the ovary and style) glandular pubescent, like the stems, the lobes linear; corolla rather less than three-quarters of an inch across; margins denticulate; the lower part of the mouth white, with dark lines composed of densely placed minute spots. The photograph (see fig. 113) was taken in the Cambridge Botanic Garden, where seeds were raised. They had been presented by Mr. W. E. Ledger, of Wimbledon. One of the plants was figured in the *Botanical Magazine* of last year, tab. 8,632. It is a native of the Transvaal. Hybrids, with other species, have been raised, notably with *S. cyanens*, with which it seems to cross the most readily. In these crosses, made both ways, the female parent in each case appears to have the greater influence. *R. Irwin Lynch.*

TREES AND SHRUBS.

RIBES MAXIMOWICZII, BATALIN.

THIS curious Currant was originally discovered in Kansu by the Russian traveller, Potanin, in 1885, but does not appear to have been introduced to cultivation until Mr. E. H. Wilson sent it from Western China. He found plants in 1904 at 8,000 feet altitude when collecting for Messrs. Veitch, and again in 1908 and 1910. *Ribes Maximowiczii*, Batalin (see fig. 114) is a deciduous shrub, 6 to 9 feet high; the young shoots are clothed with pale, often glandular, down. The leaves are of the typical Currant shape—that is to say, three, sometimes five, lobed, 2 to 5 inches wide, glossy green above, covered beneath with a soft, pale down. The blossoms appear in May, the racemes are slender and erect, sometimes as much as 6 inches in length, but only $\frac{1}{2}$ inch wide. The main rachis as well as the individual flower-stalks are covered with a glandular pubescence. The flowers are each $\frac{1}{4}$ inch wide, their chief feature being the calyx, the rounded lobes of which are of a dull lurid red and the funnel-shaped base covered with glands. I do not know that fruits have been developed in this country, but they are very remarkable in being thickly covered with stiff glandular bristles. According to Mr. Wilson, they are sometimes orange coloured and sometimes red—possibly at different stages of development. The whole plant is remarkable for the glandular down or hairs with which it is more or less densely furnished, especially the fruits. *W. J. B.*

THE RHODODENDRON BUG.

RHODODENDRONS are, as a rule, wonderfully free from fungus diseases and insect pests, but during the last ten years or so, in certain localities, chiefly Kent, Surrey, and Devonshire, the plants have been attacked by a bug, *Stephanitis Rhododendri*, which is supposed to have been introduced from the Himalayan region or North America. In the earlier stages, the attacks are only disfiguring to the foliage; but if allowed to develop unchecked for a season or two, the leaves prematurely drop, and the plant assumes an unhealthy and ragged appearance. The first sign of the pest is seen in the form of greyish dots spread irregularly over the surface of the leaves. They are easily recognised when once known, but difficult to distinguish from marks due to climatic changes by those not familiar with them. The backs of the leaves show minute brownish marks, corresponding with those on the upper surface. During the summer months, the insects can be seen in various stages. The adult resembles a small fly about one-eighth of an inch across, with a black, shiny body and white, lace-like wings, readily distinguished by the aid of an ordinary magnifying glass. It is never found on the upper sides of the leaves, and if a leaf is turned over to expose it to the

light, it immediately moves towards the edge, so as to get underneath again. It is a night-flying insect, and is never seen on the wing during the daytime. The flight is a short one, as a rule, but, owing to the comparatively large spread of wing, the insect is easily blown along by the wind, so that when it is fully grown it is very liable to be transported from one *Rhododendron* to another.

Although a somewhat difficult pest to get at, owing to its position under the leaves, it can be killed by an ordinary solution of soft soap and paraffin. Half a pound of soft soap and half a pint of paraffin to fifteen gallons of water is quite strong enough. The soft soap should be beaten up with the paraffin—a rather tedious operation, but the best way—adding about two gallons of water afterwards, and boiling until the whole is thoroughly mixed together. The solution should be syringed on to the underside of the leaves when the sun is off the plants, repeating the operation at intervals of a fortnight during the summer. The insects appear irregularly from the middle of May until September, so that constant and regular attention is necessary to get rid of them. *J. C.*

MODERN HORTICULTURE.*

PLANTS AND THE RHYTHM OF THE SEASONS.

(Concluded from p. 261.)

If the plant were a sentient being we should have to recognise its wonderful prevoyance. But it is not sentient in the sense of possessing a conscious life, and in being able to look before and after. Must we ascribe this art of preparation to what is called instinct? The power possessed by unintelligent beings to perform most intelligent acts? Or can we discover some secret signal which sets going this wonderful series of protective preparations?

It is possible, I think, to discover the agent which sets them going.

If we turn away from the temperate regions and study our problem in the tropics, we shall make the discovery that even in tropical countries, with a uniformly high temperature, many trees and shrubs show periodic seasonal phenomena similar to those exhibited by trees in this climate.

For example, the Cotton tree in Ceylon is during part of the year as bare as a Birch in an English winter; and the famous clump of Bamboos at Peradeniya stand for weeks with their gigantic suckers immobile, like fat stakes projecting from the ground.

In these cases the phenomena may be at once connected with environment, for the resting phase coincides with the dry season and the growing phase with the wet season. We know that without plentiful supplies of water growth is impossible. One of the most striking proofs of this fact is provided by an observation made by Mr. Lawrence Balls on the Cotton plant in Egypt. Exposed to full sun, a young Cotton plant remains incapable of growth, for the water which it can obtain from the soil is only just enough, if enough, to make good the loss of water as vapour from the leaves. Let but a cloud obscure the sun for a minute or two, the loss of water from the leaves is reduced, there is a surplus in the plant, and instantly growth is resumed. Nor is it only in hot countries that the growth of plants is limited by water supply.

Experiments with irrigation show that by adding artificially to the rainfall, growth and yield may be increased greatly.

A study of the meteorological records and the yields of wheat in this country discloses the same fact, namely, that in normal years water-supply is the limiting factor of plant-growth and fertility.

* Lecture delivered before the members of the Royal Institution by Dr. Keeble, F.R.S.

Now, as spring passes into summer, the leaves grow in size and number. As the soil gets warmer, the roots become more and more active, absorb increasing amounts of water, and so supply the increasing needs of the leaves. But by the turn of the year—or before—the demand of the leaves for water has outpaced the powers of the roots to meet that need, and therein, as I think, is to be found the secret signal which hints to the plant that it must cut down its expenditure. The full-grown leaves have first claim, and they continue to receive sufficient supplies of water. But the young leaves of the buds are put on short commons, and their growth is arrested, and in ways not yet known the signal is passed to all the aerial parts of the plant. In response to it cork begins to form, the lenticels are closed, the sieve-tubes are stopped, and the leaves prepare each their own downfall.

After the turn of the year, with a falling soil temperature, the preparations are accelerated, for at lower temperatures the roots of a plant are able to absorb far less water than at the highest summer temperature, and so, long before late autumn, the plant is prepared for the worst that winter has in store for it.

The record of the change from spring plenty to summer insufficiency of water is graven deep in the very fibre of the plant. The wood itself bears unmistakable signs of it. That which was formed in the spring is thin walled, and has wide cavities, but the autumn wood is more compact, has thicker walls and smaller cavities. So it comes about that spring wood and autumn wood differ so much in structure as to be distinguishable from one another by the unaided eye. Thus it is that seasonal change is registered annually in the successive concentric rings of wood, and so the age of a tree of temperate climates may be measured by the number of annual rings, as seen in a cut across the trunk.

It is even claimed, and I think that the claim has been made good, that the trunks of long-lived trees, such as the big trees of California (*Sequoia gigantea*), which are known to reach 3,000 or more years of age, reveal climatic changes of moistness or dryness, which have taken place, and have lasted for long periods during their vast span of life. By invoking the oracle of these tree trunks botanical augurs have been able to reveal the climatic changes of the distant past, and their conclusions have verified those arrived at by archaeologists as the result of investigating ruined cities on the Asiatic plains.

With yet more certainty we may trace the effects of the late summer and autumnal shortage of water on the living plant. The watercourses of the wood are narrowed, the sieve-tubes closed, instead of broad leaves leathery scales are formed, and enclose the tender rudiments of next year's foliage, corky layers invest the stem, and close the breathing pores, and the leaves are cast off. Thus the threat of water-famine is averted by a wholesale reduction of consumption.

But since without water all active vital processes are brought to a standstill, this reduction in supplies brings about a slowing-down of the plant's activity. Moreover, the corky tissues investing stem and buds prevent the escape of carbon dioxide, one of the chief waste products of vital activity. Accumulating in and about the tissues, the carbon dioxide acts as a narcotic, reinforcing the inactivity of the tissues. That this is so is evident from the remarkable recent discoveries of Mr. Kidd, who has shown that if seeds are kept in an atmosphere of some 10 to 20 per cent. carbon dioxide, they remain in a state of suspended animation and fail to germinate, although provided with plenty of water and warmth. Remove the carbon dioxide and germination begins at once.

To falling water-supply, accumulating carbon-dioxide and immobilisation of food supplies is to be attributed the state of rest and lethargy in which our plants pass the winter.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

AUTUMN STRAWBERRIES.—If plants of *Vicomtesse Héricart de Thury* Strawberry that have been forced into fruiting early be carefully hardened off and planted in beds in the open, this variety will give an excellent crop again in September and October. It is the best autumn bearer that I know, and the bearing of two crops in one year does not prevent its giving a good crop again the following season. *W. H. Divers, Belvoir Castle Gardens, Grantham.*

PROTECTING STRAWBERRIES.—Wire netting along the outside of the beds I consider rather awkward. My plan is to have a number of pegs (about 2 feet 6 inches or 3 feet, by 2 inches, by $\frac{1}{2}$ or $\frac{3}{8}$ inch); the lower end is sharpened to go in the ground, the other perforated with a $\frac{1}{2}$ inch hole near the top. A row is placed along the middle of the bed and long canes (6 or 8 feet) threaded on; the extremities of these canes are supported by pegs at each end. I make narrow beds and place the canes obliquely with suitable arrangement of short canes at the ends

thin, and some trees are complete failures. It would be interesting to know the cause. The trees in our case flowered profusely, every care was taken to pollinate the blossoms, and the wood was apparently in the pink of condition. Trees out-of-doors on a west wall flowered and set fruit freely. *Edwin Beckett.*

BRUSSELS SPROUTS (see pp. 175, 188, 212, 247).—I am pleased to learn that *Practical* is content with one sowing of seed, and that others are not necessary in his case. He quotes me as stating in my book that "the best Brussels Sprouts are only obtained by allowing the plants a long season of growth," which, of course, I adhere to; but in the same book he will read: "To obtain a succession of firm and succulent Sprouts through the winter, another sowing must be made, about the second week in April." The past season has fully borne out my advice, as the later sowing gave a magnificent crop of fresh, firm, green Sprouts after the earlier sowing had become practically exhausted. In any case, *Practical* has done well to urge the extended cultivation of what I consider to be the most prolific, one of the most

are greatest, and for distributing help either in money or kind where it is most wanted. But in order to be ready when the war ends, funds must be obtained or guaranteed now. The Society has already sent a Special Commissioner to Serbia, who has carefully investigated and reported on the most urgent needs of that sadly afflicted people. His Majesty the King has given a donation of £100; the Royal Horticultural Society has contributed £1,000, and other subscriptions have been received; but to do the work adequately a very large sum is required. We hope, therefore, that all those interested in gardening, private or commercial, as well as all who are anxious for the future welfare of our Allies, will contribute something, however small, to this fund. Donations and promises should be addressed to the President of the Ladies' Committee, c/o Royal Horticultural Society, Vincent Square, Westminster, S.W. All cheques should be crossed "War Horticultural Relief Fund." Signed: Aldenham, A. Allendale, Alice Balfour, Balfour of Burleigh, Margaret Crewe, Devonshire, Elphinstone, Vicary Gibbs, Grenfell, F.M. Mary Harcourt, G. L. Holford, Lindlithgow, John T. D. Llewellyn, Edmund Giles Loder, Mary L. Lowther, G. Norfolk, A. S. Northcote, Powis, Marie de Rothschild, Mand Selborne, Harriet Wantage, Lilian Zetland.

AN EARLY SWARM OF BEES.—I write to enquire if any other gardener was before me in having a good swarm of bees on April 27? *E. Croucher, The Old Lodge Gardens, Ashford, Middlesex.*

MEDICINAL HERBS (see pp. 207 and 225).—I was expecting that Mr. E. M. Holmes, or some other authority on the subject, would point out the danger of being too optimistic in regard to the possibilities of growing for profit certain medicinal plants, as suggested in Mr. A. R. Horwood's article. There are difficulties ahead which should not be ignored, laudable as is any endeavour to grow in quantity a few of these useful herbs. The primary difficulty "attends the furnishing of an adequate supply of stock plants, seeds, roots and rhizomes," as Mr. Horwood remarks. I believe this particularly applies to *Belladonna* and *Hyoscyamus*, the two plants most needed. A leading firm of seedsmen cannot supply me with seed of either. I am sceptical about the drawback being surmounted by getting in touch with the Board of Agriculture, the Herb Association, or the proprietors of drug farms. Leaflet No. 288 of the Board of Agriculture alludes to this "greatest difficulty." If Mr. Horwood could have definitely stated more on that point, instead of saying alluringly that such and such a herb is worth so much a cwt., it would have been more useful. Although *Aconite* is much used in medicine I was unable to get any offer for seed of native *A. Napellus* quickly collected in the West of England last September, and eventually gave it away to friends with large gardens. To me it seems that the collection and drying of *Dandelion* roots is the most feasible thing to encourage, and something might be done by intelligent school children. As to *Chamomile* (*Anthemis nobilis*) being rarer than it once was, I agree with Mr. Horwood, and although *J. F.* finds it in plenty on commons and elsewhere in Surrey and some other southern counties, it is distinctly a local plant in England, and usually seen on gravelly or sandy soil. For example, it is very rare in Gloucestershire and North Somerset, but not uncommon in West Somerset, where for instance it can occasionally be seen even in the highest cultivated ground of the Quantock Hills. *H. S. Thompson.*

CEDRUS LIBANI.—As a lover of trees I much regret the loss of so many well-known Cedars, which have been damaged, and in many cases uprooted, by the gale in March. The question naturally arises, what can be done with these uprooted monsters? Is the timber of any value? The timber merchant may possibly offer firewood price to clear. For many years I have experimented with home-grown timber on this estate, and my grandfather before me.* From experi-

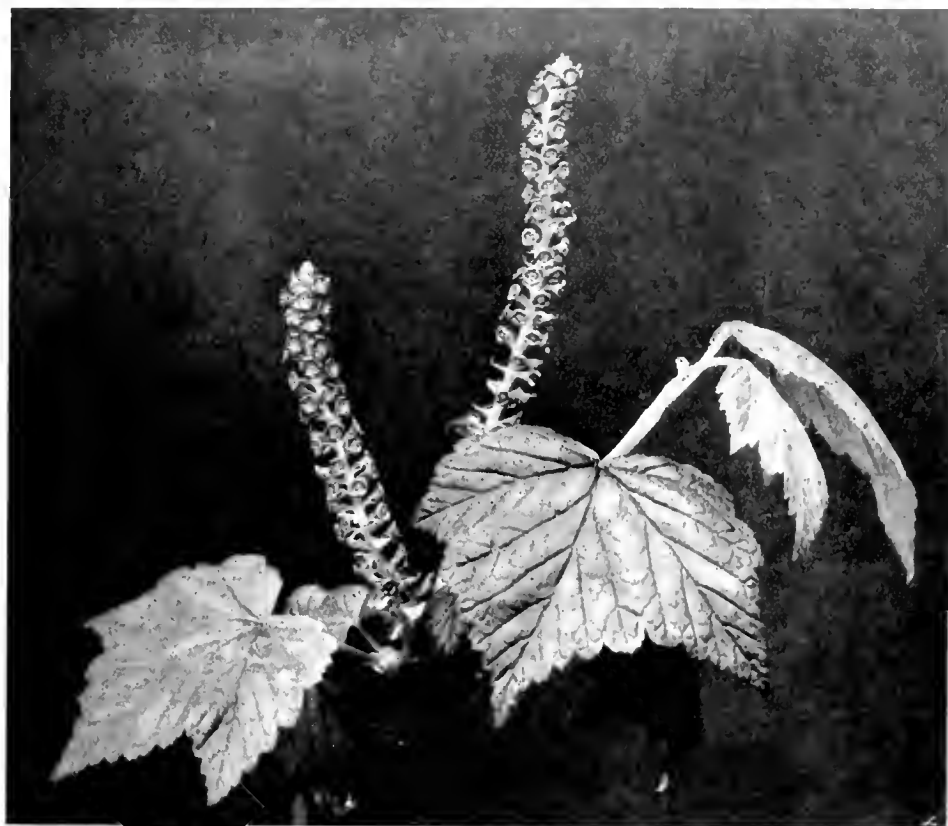


FIG. 114.—*RIBES MAXIMOWICZII*: A NEW SPECIES FROM WESTERN CHINA.

(See p. 272.)

of the bed. String netting is thrown over these supports and rests on the ground all round; the netting is easily thrown back for picking, and with the oblique arrangement the plants are very accessible; no serious catching of the net occurs, and the bed is covered or uncovered in a moment. If the netting is soaked in weak copper sulphate, dried, then wetted with weak soap solution, and again dried, it will resist rotting for a long while, as will any other fabrics that are exposed to the weather. Pegs made from old Oak cask staves and given a dressing of "Wood Salve" or something of the kind will last for years. *H. E. Durham.*

PEACH AND NECTARINE FLOWERS FAILING TO SET.—It is not pleasant to have to write of one's failures, but during my experience I have never had such a disappointment with my Peach and Nectarine trees through the flowers failing to set as in the present season. I have noticed several inquiries respecting the cause, so that I am not alone in the matter. Strange to say, our early crops are good, but those in the intermediate and late houses are extremely

hardy, and certainly one of the most valuable winter green vegetables. *Edwin Beckett.*

THE WAR HORTICULTURAL RELIEF FUND.—We venture to appeal most earnestly for contributions to the Royal Horticultural Society's War Relief Fund, which has been formed for the purpose of enabling our Allies, when the war is over, to restart their horticultural industries. Belgium, in particular, is the commercial garden of Europe, and its horticultural produce has supplied all the countries of the world. Now those nurseries and gardens on which so much of the prosperity of the nation depended are laid waste, and the means of livelihood of thousands of industrious men and women have been destroyed. Hardly less cruel is the state of Northern France, Serbia—a great fruit-growing country—and Poland. No form of charitable assistance is of so much value as that which enables those ruined by no fault of their own to regain their independence, and this may eminently be said of the assistance now asked for. The Royal Horticultural Society has special facilities for ascertaining where the needs

* *Trees of Great Britain and Ireland*, Vol. VI., p. 1505.

ence I find that the wood of the Cedar of Lebanon is very valuable for general estate purposes, such as rafters, purlins, stud work, wall plates and tie beams. It is very durable, and not liable to warp. I have also used it for floorboards, mangers and partitions in cow-stalls and stables, also for joinery work. I have two vinery doors which were made 22 years ago, one of Cedar, the other of Corsican pine, which today are absolutely sound, showing no sign of decay. I have also made use of the Cedar for washing-troughs in the laundry, made 12 years ago, which are still sound. In conclusion, while sympathising with people who have lost, I may say, "old friends," I hope that they will not sign their death-warrant as "firewood"—an insult to these noble trees—but make use of them for general estate purposes. Also Corsican Pine, a rapid-growing tree in any soil, producing a resinous and durable timber. *H. Clinton Baker.*

PERPETUAL-FLOWERING CARNATIONS.—(see p. 188).—Carnations can be successfully cultivated in the complete absence of leaf-soil, but it is also a well-established fact that they will grow in soils in which leaf-soil forms a part. The argument that Carnations dislike leaf-soil has been used before, but having used leaf-soil successfully I am sure the assertion is wrong. I have used it in proportion of about 1 part to 3 of loam, but I know of one grower for market who has used it largely because of the stiff character of his loam, and the stock was quite healthy. Having grown them also without leaf-soil in a variety of loams, with and without decayed horse manure, I am certain they are quite as good without it. I also believe that the growth is firmer and that the plants stand longer than they do when leaf-soil is used. Leaf-soil holds moisture, and it is well known that too much moisture at the root is a thing to be guarded against. Firm potting is generally considered essential for their well being; but I saw last season a house that had recently been planted on the bench system, and the soil appeared to be comparatively loose. Having had no opportunity of seeing the plants since I am anxious to learn if it is usual to plant lightly on the benches. *G. H. H.*

NEW HYBRID POPLAR: A CORRECTION.—The interesting hybrid Poplar described by me in *Gardeners' Chronicle*, April 29, 1916, p. 231, fig. 98, as *Populus Baileyana*, turns out to be identical with *Populus Jackii*, Sargent, *Trees and Shrubs*, ii., p. 212 (1913); and the former name, being an unnecessary synonym, must be abandoned. I owe an apology to the veteran dendrologist for having overlooked his prior and accurate description; but the figure given by me and the additional details as to the distribution are of interest and use. Sargent states that *P. Jackii* is cultivated in the Arnold Arboretum; and adds that the leaves on vigorous shoots become silvery white beneath, attaining 6 inches in length and 5 to 5½ inches in width. It is accordingly handsome and worth introduction. It was found in Quebec by Jack as a single large tree on Nun's Island at the mouth of the Chateauguay River, and as a smaller tree on the south bank of the St. Lawrence at Beauharnois. *A. Henry.*

NOSEGAY PELARGONIUMS (see pp. 175, 188, 212, 225, 237).—Your correspondent, Wm. Taylor, Bath, states on page 237 that the only Nosegays he remembers are Pink Nosegay and Salmon Nosegay. I can, however, assure him that there were quite a number of Nosegay varieties to be met with in the catalogues of the 'sixties of the last century. Two of the most popular varieties for bedding purposes at Kew were Stella and Lady Constance Grosvenor. They were by some growers considered identical, but when placed together the differences between them could be readily detected. The main characteristics of a typical Nosegay variety were bold trusses of winged flowers, for the most part of bright colours. They stood rain well; hence their value for bedding purposes. In time new varieties were raised, which more nearly approached the Zonal varieties in their rounded and more massive flowers, until the line of demarcation between the two sections disappeared altogether. From that time the name of Nose-

gay was rarely used. The variety Master Christine alluded to by one of your correspondents, which gained the Royal Horticultural Society's First-class Certificate in 1870, was distributed in the following year by Mr. H. Cannell, then of Woolwich. When first sent out it was known as Cannell's Master Christine. *W. T.*

I find that Stella (p. 225) was raised by Donald Beaton in 1858, and was described by him as "Stellatum or Stellate Nosegay," "half-way between a Nosegay and Tom Thumb." It was distributed by E. G. Henderson and Son in 1860, and two years later David Thomson, then becoming famous as a flower gardener, declared, if the raiser had given the gardening world nothing else, Stella was sufficient to make gardeners for ever grateful. Besides Stella Improved, a variegated form was produced by Perkins, of Thornham Hall, Suffolk, and Stella sulphurea marginata was offered by Henderson in 1867. Of the origin of Rival Nosegay I can find no trace. In notes on Pelargoniums made in 1866 Rival Nosegay is one, and in the same garden Marrener's Scarlet was the chief variety bedded. This is, perhaps, Merrimac, as I can find no Pelargonium named Marrener. Cybister is another of the Stella group which caused a short-lived sensation. There was another section—the globe-flowered—frequently mentioned by mid-century writers. These were derived from Pelargonium compactum, and one named Princess of Prussia illustrated in 1861 shows it to be quite distinct alike from the Tom Thumb and the Nosegay sections. Later it seems to have been worked by Continental raisers, and I have one in flower at present named Jules Michalot, the truss of which is a perfect sphere, crowded with many dozens of pips. Beaton died in October, 1863, and left a number of seedlings which Gibson was growing for him at the Crystal Palace. A selection from these was sold by Dr. Hogg, who was the executor to Beaton's estate, to Mr. W. Paul, of Waltham Cross. Of these I remember Amy Hogg, Waltham Cross and Indian Yellow. The pedigree of the tricolor section is very interesting. Pelargonium inquinans gave a yellow-leaved sport near the end of the eighteenth century, which later was extensively employed in floral arrangements by the name of Golden Chain, and is perhaps not yet extinct. Up till about the year 1844 the white variegated forms were probably only that mentioned by Miller and the extensively cultivated Mangles' Variegated, which Captain Mangles secured eleven years earlier from Pelargonium heterogammum. This variety was notorious for its reluctance to cross. At or about the date mentioned Lees Variegated, said to have originated with Bailey, of Nuneham Park, appeared, and Kinghorn, of Richmond, a well-known florist-nurseryman, fertilised *P. compactum* with pollen from that variety, from which he obtained two varieties still in cultivation—Crispe Unique and Flower of the Day. Some authorities consider that it was from one of these that he raised Attraction, which proved to be the first silver tricolor, the zone being pink, or, according to some, rayed with "red and dark brown." Peter Grieve, working on a theory, adopted Attraction as a parent, and fertilised a dark-zoned old variety named Cottage Maid with it, one of the issue producing three varieties on the one plant, one of which, named Emperor of the French, with a very dark zone, was selected for further use. The next step was the introduction of yellow, and here the old Golden Chain comes in, Cottage Maid crossed by that variety producing Golden Tom Thumb, which supplied pollen to fertilise Emperor of the French, yielding Golden Pheasant, the first yellow tricolor. The last named again gave pollen to fertilise Emperor of the French, the extremely popular Mrs. Pollock being the result. John Wills, the well-known floral decorator, who was the first to successfully cross Pelargonium peltatum with a Zonal, and so laid the foundation for the beautiful race of Ivy-leaf varieties in 1866-7, produced another section which was extensively used in flower bedding by the name of Golden Bronze. Beauty of Oulton seems to have been the first of these. He got great vigour into the race, and also a more defined zone, by the use of a strong-growing, dark-zoned variety as seed parent. *R. P. Brotherton.*

APPLE LEAVES SCORCHED BY LIME WASH (see p. 255).—During a visit to Swanmore Park Gardens, Hampshire, on May 3 of last year, I saw an experiment that may be worth relating. A young tree of Merryweather Damson was freely sprayed when in full bloom with a mixture of 1½ lb. of Buxton lime to 1 gallon of water. The specific was applied quite warm. Three Apple trees were also sprayed as an experiment when the flowers were just bursting. Mr. Molyneux informed me that not the slightest injury occurred, but that both the Damson and Apples set freely, and perfected their fruit. The whole of a large orchard had been heavily sprayed on April 10 and 15, 1915, the proportions used on each occasion being 50 lb. of lime to 40 gallons of water and 112 lb. of lime to 112 gallons of water. The spray had a marvellous effect in cleansing the trees from lichen, every particle of which was destroyed, but it had no effect on a bad attack of greenfly. This year my visit was later, the trees were looking remarkably well, thoroughly clean, and both the Damsons and Apples, which I saw dressed, were in the best condition, flowering, and setting their fruit freely. I fear that *Southern Grower* must have used the lime at too great a strength, or of an inferior quality. *E. Beckett.*

SOCIETIES.

ROYAL HORTICULTURAL.

MAY 16.—The fortnightly meeting held on Tuesday last in the Vincent Square Hall, Westminster, was surprisingly good, seeing that the great summer exhibition is so near at hand. We missed a few regular exhibitors, but this notwithstanding, the Hall was filled with exhibits. Large collections of Tulips were staged, but the National Tulip Society's Show was cancelled at the last moment. Very few Orchids were shown, and the Orchid Committee recommended only one Award of Merit, one Preliminary Commendation, and one Silver-gilt Flora Medal.

The Floral Committee recommended seven Awards of Merit to novelties and awarded seven-teen medals to collections.

The Narcissus Committee recommended four Awards of Merit to new varieties of Tulips and awarded five medals to collections of Tulips.

The Fruit and Vegetable Committee made no award.

At the 3 o'clock meeting in the Lecture Room the Rev. Joseph Jacob delivered an address on "Daffodil Development."

Floral Committee.

Present: Messrs. H. B. May (chairman), W. Cuthbertson, C. E. Shea, A. Turner, John Dickson, John Heal, J. F. McLeod, J. W. Moorman, C. R. Fielder, G. Renthe, J. Hudson, R. Hooper Pearson, W. J. Bean, R. C. Notcutt, G. Paul, E. Mawley, E. H. Jenkins, W. P. Thomson, B. Crisp and W. B. Cranfield.

AWARDS OF MERIT.

Carnation J. G. Fortescue. A flaked sport from Horace Hutchinson, a small Souvenir de la Malmaison variety. The petals are heavily flaked with red on a white ground. The blooms are fragrant, of excellent form, and have much the appearance of a Perpetual border variety. Shown by J. B. FORTESCUE, Esq., Maidenhead.

Rose C. E. Shea. A Hybrid Tea variety, with long, beautifully shaped buds, that reveal, as the petals roll back, a rich salmon-pink colour. The foliage is large and of great substance, whilst the long, stiff stems suggest a robust constitution and growth. Raised by Messrs. LOWE and SHAWYER; exhibited by Mr. ELISHA HICKS.

Saxifraga J. C. Lloyd-Edwards. A dwarf, mossy variety, with flat flowers, the petals being almost as regular in outline as an Auricula, and of a rich rose colour, passing with age to rosy-crispe. There is a lighter zone in the centre of the bloom, which measures about 1 inch across.

S. R. T. Wickham. Much taller than the last and with a freer habit, but with dwarf foliage. The spikes are about 8 inches high, and bear numerous rose-coloured flowers striped with deeper rose and blotched at the base.

These two Saxifrages were shown by Mrs. LLOYD-EDWARDS.

Euphonia Cneorum Verlotii. According to the *Revue Horticole*, 1901, p. 304, this French plant was first described in 1855 by Grenier and Gordon in *Flore française*, from specimens obtained in the mountainous region of Grenoble, and was regarded by the authors as a species, but subsequent diagnosis by other botanists led to its being recognised as a variety of *Cneorum*. D. C. Verlotii is described by the authors as a hardy shrub, 8-10 inches high, with slender, spreading branches. The flowers are in small corymbs, sweetly scented, and deep pink in colour, passing with age to a deeper tint. The plant flowers in its natural habitat in the latter part of May, and according to Grenier and Gordon is from 8-10 days later than *Cneorum*. The habit is trailing, so that the plant is a good subject for the rock garden. Exhibited by Messrs. WATERER, SONS AND CRISP, LTD.

Auricula Edith. An alpine variety with large truss of mauve-shaded crimson flowers, with a beautiful pale-yellow centre. The plant is of vigorous habit. Shown by Mr. C. TURNER.

Pyrus Malus aldenhamensis. This beautiful flowering tree was shown as a seedling of P. Niedwetzkiiana, but it more resembles the floribunda type; the stalks are 2-3 inches long and the inflorescence forms a short corymb of some six blooms developed on a spur. The sprays exhibited were crowded with deep pink blossoms. The variety is a notable addition to flowering Crabs. Shown by Hon. VICARY GIBBS (gr. Mr. E. Beckett).

OTHER NOVELTIES.

Mr. H. WHITEHEAD, Cheltenham, exhibited a tall-growing, double-flowered Lobelia of deep blue colour, said to be a sport from Catherine Mallard. The plant has the habit of L. tenuior, and would prove useful as a basket subject or for training as pot plants in columns for the greenhouse stages.

Mr. JAMES DOUGLAS, Great Bookham, showed a fine green-edged Auricula of the Mrs. Henwood type, but distinct, named The Bookham Green. It is a very robust variety, and the specimen had a stout truss of extra large pips of the best florists' type.

Messrs. R. WALLACE & Co., Colchester, exhibited a new species of Primula from China named P. membranifolia. The whole plant is very dwarf, the foliage consisting of only a small tuft of spatulate, pale green leaves that are notched at the blade end. The inflorescence is an umbel of about five flowers on a stalk an inch or two high; one of the spikes had more than one tier of blossoms. The petals are pale mauve colour, and there is a paler central zone passing to sulphur-white in the throat.

Mr. ELISHA J. HICKS, Twyford, showed a new Rose from China—Rosa setipoda. The single blooms are 1½ inch across, and are produced in lax axillary trusses of 6-10. The colour is pink, fading to white in the centre. The stems are free of spines, but there were prickles on the petioles.

Messrs. GROVE, Sutton Coldfield, showed a hybrid Geum (G. Mrs. Bradshaw × G. Heldreichii) with deep apricot-coloured double flowers.

Messrs. BEES, LTD., Neston, Cheshire, exhibited a tiny but beautiful plant of Isopyrum grandiflorum. The colour of the single blossom was a very beautiful shade of mauve, but the plant was apparently too small to gain the Committee's awards.

GENERAL EXHIBITS.

The following medals were awarded for collections:—

Silver-gilt Flora Medal to Messrs. B. CANT & SONS, Colchester, for a very fine exhibit of Roses.

Silver-gilt Banksian Medal to Messrs. FRANK CANT & Co., Colchester, for Roses.

Silver Flora Medals to Messrs. R. & G. CUTHBERT, Southgate for a large exhibit of Antirrhinums in pots. This firm also showed, as a separate exhibit, a collection of Tulips in pots.

Messrs. H. B. MAY & SONS, Edmonton, for Ferns, Hippeastrums, Verbenas, standard Fuch-

sias, Heliotropes and other greenhouse flowers. Tall Hippeastrums associated with Hydrangea hortensis Mme. Mouillière made a pretty centre-piece.

Silver Banksian Medals to Mr. JAMES DOUGLAS, Edenside, Great Bookham, for choice Auriculas.

Mrs. LLOYD-EDWARDS, Bryn Cerog, Wales, for Seedling Saxifrages.

Mr. G. W. MILLER, Wisbech, for garden flowers in variety; and Messrs. WHITELEGG & PAGE, Chislehurst, for well-flowered plants of Schizanthus.

Bronze Flora Medal to Mr. ELISHA J. HICKS, Twyford, for new Roses.

Bronze Banksian Medals to Messrs. J. CHEAL & SONS, Crawley, for Lilacs, varieties of Cydonia japonica, Pyrus Scheideckeri, Berberis stenophylla and other flowering shrubs; Hydrangea hortensis with very large trusses of bloom, and Alpines in variety; Messrs. STUART LOW & Co., Bush Hill Park, Enfield, for Carnations of the perpetual-flowering type. A novelty was shown in the Perpetual-Malmaison variety Mrs. Miles Kennedy, of Princess of Wales colour and possessing a rich, clove scent; Mr. KERSWILL, Exeter, for Gentiana acaulis; Messrs. PIPER & SONS, Bayswater, for flowering trees and shrubs and topiary specimens; Messrs. BARR & SONS, King Street, Covent Garden, for Irises; Messrs. REAMSBOTTOM & Co., Greshill, King's County, for St. Brigid Anemones; Mr. G. REUTHE, Keston, Kent, for Tulips, Rhododendrons and Alpines; and Messrs. GILL & SONS, Exmouth, for Rhododendrons and Embotrium coccineum.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (vice-chairman), Sir Harry J. Veitch, Messrs. Jas. O'Brien (hon. secretary), Pantia Ralli, Gurney Wilson, F. J. Hanbury, F. M. Ogilvie, W. Cobb, J. Charlesworth, J. E. Shill, W. H. White, S. W. Flory, C. J. Lucas and R. A. Rolfe.

AWARDS.

AWARD OF MERIT.

Mitonia Hygeia F. M. Ogilvie, Shrubbery variety (*Blanda Stearnsii* × *varicillaria Memoria G. D. Owen*), from F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth). The second of the batch to receive an Award of Merit, the first one to flower having been shown on May 18, 1915. The present very small plant bore a two-flowered spike of finely-shaped, pure-white flowers, the petals having a rose tinge at their bases and the lip a dark velvety maroon mask with short lines at the margin and upper edges round the column.

PRELIMINARY COMMENDATION.

Odontoglossum Baileyi (King Emperor × *amabile*), from Messrs. ARMSTRONG & BROWN, Tunbridge Wells. A handsome and distinct hybrid with the inner parts of the segments orange-red, the margins about a quarter of an inch wide and pure white. Messrs. ARMSTRONG & BROWN also showed three handsome seedling forms of O. eximium.

GROUPS.

Only one group was staged on this occasion, a selection of rare and handsome Orchids from the collection of F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), which was awarded a Silver-gilt Flora Medal. At the back was a selection of fine forms of *Odontoglossum crispum*, including three specimens of the pure white O. crispum White Lady, O. crispum hololencum, also pure white and resembling the best form of O. crispum xanthotes, but without the yellow spots on the sepals and petals; O. crispum Queen Empress, a grand typical form with rose-tinted sepals; O. crispum Ronald, a model flower; and O. crispum Mont Blanc; the best spotted form was O. crispum Alexandrovitch, a flower of great size and beautifully marked. Forms of O. eximium, O. Pescatorei and other *Odontoglossums* were also staged. The collection contained *Odontioda* Mrs. F. M. Ogilvie, the best of the Coronation Class.

Dr. MIGUEL LACROZE, Bryndir, Roehampton Lane, S.W. (gr. Mr. Cresswell), showed *Odontoglossum Dora Bryndir* variety (*Lambeaunium* × *Pescatorei*), a large, white flower of O. Pescatorei shape evenly blotched with violet colour.

H. T. PITT, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), exhibited *Cymbidium Lowianum* Rosslyn variety (*Lowianum* × *tigrinum*), which received the R.H.S. Award of Merit in 1910.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Hannington), exhibited *Odontoglossum Pescatorei* Grand Duchess with large and finely formed flowers.

C. J. LUCAS, Esq., Warnham Court, Horsham (gr. Mr. Duncan), showed two pretty seedling *Odontoglossums* named O. ardentisper (ardentissimum × Jasper) and O. Panther (crispum × *Lambeaunium*).

T. J. FINNIE, Esq., Claygate (gr. Mr. Frogley), showed a fine specimen of the rare *Catasetum Rodigasianum* with two spikes, each bearing about forty fleshy greenish flowers spotted with dark purple-brown; the scoop-shaped lip is upturned at the margin.

Narcissus Committee.

Present: Messrs. E. A. Bowles (vice-chairman), Joseph Jacob, G. W. Leak, H. Smith, J. Duncan Pearson, W. F. M. Copeland, W. B. Cranfield, P. R. Barr, R. W. Wallace, A. D. Hall and Chas. H. Curtis.

AWARDS OF MERIT.

Tulip Lady Love. A cross-bred variety of the *Gesneriana* type, with long, pale yellow blooms coloured rich buttercup-yellow inside.

T. Inglescombe Mauve. A cottage variety with egg-shaped blooms on long stalks. The colour is soft mauve, paler on the edges of the petals.

T. Zovilla (cottage). A beautiful variety of rose shading, flushed with orange inside and with gold-coloured base.

T. Asturias (cottage). This resembles a Darwin variety but has not the base of a Darwin Tulip. It is goblet-shaped, the colour being rosy-lilac and a deeper tone inside. These four Tulips were shown by Messrs. W. T. WARE, LTD.

COLLECTIONS.

The following medals were awarded for collections of Tulips:—

Silver-gilt Flora Medals to Messrs. DOBBIE & Co., Edinburgh, for an imposing exhibit of Tulips staged on tiers against a background of black velvet. There were large sheaves in epergnes and vases of such beautiful sorts as *Gesneriana lutea*, *Loveliness*, *La Candeur*, *Baronne de la Tonnaye*, *Europe*, *Mrs. Moon*, *Glow*, *Faust*, *Prof. M. Foster*, *Psyche* and *White Swan*; and Messrs. BARR & SONS, King Street, Covent Garden, for a very large exhibit relieved with Maples and Ferns.

Silver-gilt Banksian Medals to Messrs. R. WALLACE & Co., Colchester, for a large exhibit on a low table; and Messrs. WATERER, SONS & CRISP, LTD., Twyford, Berkshire.

Silver Flora Medal to Messrs. R. H. BATH, LTD., Wisbech, for Darwin and May-flowering Tulips, Pansies, and *Scilla campanulata* in variety.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

APRIL 27. — *Committee present*: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. Cypher, A. G. Ellwood, J. Evans, A. R. Handley, A. Hammer, J. Lupton, D. McLeod, W. Shackleton, S. Swift, and H. Arthur (secretary).

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontoglossum Phoebe Ashworth's var., *Mitonia Charlesworthii var. Rosendale*, both shown by R. ASHWORTH, Esq.

Cattleya Brenda Gratrixae and *Sophro-Lavlia-Cattleya Niobe* (S.-C. Gattoiana × L.-C. Felicia), both from S. GRATRIX, Esq.

Odontioda Brewii var. Niger, an intensely dark variety, almost black, and *O. Brewii Hudson House var.*, both shown by P. SMITH, Esq.

Oncidioda Cooksoniae var. splendens (C. Noeziana × *Oncidium macranthum hastiferum*), a deep red flower, of the macranthum shape. From Messrs. J. AND A. McBEAN.

AWARDS OF MERIT.

Odontoglossum Ashworth var. Rosendale, *O. Vulturaria Ashlands var.*, *Odontioda Zenobia Ash-*

lands var., and *Cypripedium candidum* Ashlands var., all from R. ASHWORTH, Esq.

Odontoglossum Ruby var. *Distinction* (crispum-Horryanum × Vaylsticki), *O. Caroline* var. *Golden Fleece* (Lawrenceanum × Pescatorei), *Miltonia Phalenopsis Hadron House* var., and *Cypripedium niveum* var. *Fairy Queen*, all from P. SMITH, Esq.

Miltonia Blucana Carter Place var., and *Odontoglossum Promerens* var. *Leonice*, both exhibited by TOM WORSLEY, Esq.

O. crispum var. *Virgin Queen*, from Mrs. GRATRIX.

Cattleya Dominiana West Point var., shown by S. GRATRIX, Esq.

Cymbidium × *Lady Evelyn James*, from the Hon. ROBERT JAMES.

Dendrobium roseum Beardwood var., from Sir J. RUTHERFORD, Bart.

Odontioda Joan (Oda, Charlesworthi) × *Odm. ardentissimum*, shown by Messrs. CHARLES WORTH AND CO.

SCOTTISH HORTICULTURAL.

MAY 2.—The monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh, on this date. Mr. Pirie, the president, was in the chair, and there was an attendance of 65 members.

Dr. W. G. Smith, Edinburgh and East of Scotland College of Agriculture, gave a lecture, illustrated by lantern-slides, on "Scottish Arctic-Alpine Plants in their Native Haunts." These plants occur only on the higher mountains, but become more abundant in Scandinavia and on the Alps. They require places free from the competition of the more common moorland plants, hence they are confined to bare summits and to more sheltered corries and screes where rocks are being eroded and the weathered material forms more or less soil. The greatest profusion occurs in corries protected by snow in winter, and kept moist by snow-water or springs during the greater part of summer. The photographs shown were of Ben Lawers and Scandinavian plants.

The exhibits were: Six new seedling Narcissi, from the president, three of which were awarded First-class Certificates; a collection of Scillas from Messrs. Dobbie and Co., Edinburgh; and three new seedling Roses from Mr. W. Ferguson, Dunfermline.

Obituary.

ALBERT LIDDINGTON.—We regret to announce the death, in his 52nd year, of Mr. Albert Liddington, which took place on May 11 from heart failure. The deceased was head gardener at Gillsborough Court, Northampton, and held the position for seventeen years. He was of a quiet and unassuming character, and ever ready to assist those in need of help. His many friends in the horticultural world will greatly regret his death. He leaves a wife and daughter to mourn his loss.

LIEUT. ALAN L. RAMSAY.—We deeply regret to learn that Lieut. Alan L. Ramsay, Royal Irish Fusiliers, was shot by the rebels in Dublin on Easter Monday. He was the eldest son of Mr. D. L. Ramsay, J.P., the Royal Nurseries, Ballsbridge, Dublin, and assisted his father in the management of the business until the outbreak of the war, when he joined the Officers' Training Corps, Trinity College, Dublin, and eventually went to the front, where he was wounded. Returning home and regaining convalescence, he passed an examination at Camberley for prospective promotion. Universal regret is felt in Dublin circles at the loss of a promising young officer under the peculiarly tragic circumstances.

PETER HARPER.—We record with regret the death of Mr. Peter Harper, late superintendent of the Duthie Public Park, Aberdeen. Born in 1831, Mr. Harper many years ago entered the service of the late Miss Duthie, who presented the Duthie Park to the city of Aberdeen in 1881, Mr. Harper becoming the first superintendent. During his term of office

of over 30 years many improvements were made in the park. He was a member of the Royal Horticultural Society of Aberdeen, and took a great interest in its affairs. He was over 80 years of age when, in 1914, ill-health following an accident compelled him to relinquish his appointment.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending May 17.

Variable in temperature.—This was a week of variable temperature. On the warmest day the highest reading in the thermometer-screen was 70°, and on the coldest night the exposed thermometer fell to the freezing-point. The ground is at the present time 1° warmer at 1 foot deep and 1° colder at 2 feet deep than is reasonable. Rain fell on four days and to the total depth of half-an-inch. During the week 1½ gallon of rainwater came through the bare soil percolation-gauge and 1½ gallon through that on which short grass is growing. The sun shone, on an average, for 2½ hours a day, which is 3½ hours a day short of the mean daily duration for the time of year. Light airs and calms prevailed except on the 14th inst., when there was a moderate breeze. The mean amount of moisture in the air at 3 o'clock in the afternoon exceeded a reasonable quantity for that hour by 5 per cent. The first Rose to flower in the open ground in my garden this year was *Rosa rubella* (which may be described as an improved form of *Rosa alpina*), on the 16th inst., which is one day later than last year and eleven days later than in 1914. E. M.

THE WEATHER IN SCOTLAND.

April opened mild and bright. Towards the middle of the month the weather became dull and showery, clearing again into genial days from the 26th onward. The rainfall was 1.61 inch, distributed over 15 days, with the heaviest fall, of 0.26 inch, on the 24th. Of sunshine we had 137.8 hours, being 32.5 per cent. of the possible; there were seven sunless days. The barometer varied from 30.371 inches on the 29th to 29.064 inches on the 13th, with a mean of 29.773 inches. On the 27th the highest maximum temperature of 61° was recorded, and on the 19th the lowest maximum of 44°, with a mean of 52°. The highest and lowest minima were 45° and 28° on the 25th and 6th respectively, the mean being 36°. For the month the mean temperature was 44°, with a mean range of 16° and an absolute range of 33°. On seven days the thermometer fell to or below 32°. The grass thermometer gave a mean for the month of 32°, the lowest being 24° on the 6th; there were 15 nights of ground frost. At 1 foot deep the soil temperature rose from 40° to 47°. The prevailing winds were westerly. A rainbow was seen on the 4th. *James Malloch, Director of Studies, St. Andrews' Provincial Training College Gardens, Kirkton of Mains, near Dundee.*

CATALOGUES RECEIVED.

Farm Seeds

SUTTON & SONS, Reading.
KENT AND BEYDON, Darlington.
TULLEY, 6, London Road, Brighton.

Foreign.

KNIGHT AND STRICK CO., 1, Madison Avenue, New York, Seeds and Plants.
H. A. DREER, 714-6, Chestnut Street, Philadelphia, U.S.A.—Seeds.
JOHANNES RAFF, Copenhagen-F., Denmark.—Tree Seeds.
E. H. KRELLAGE AND SON, Haarlem, Holland.—Bulbs.
V. LEMOINE AND SONS, Rue du Montet, 136-142, Nancy, France.—Plants and Bulbs.
PETER HENDERSON AND CO., 35 and 37, Cortlandt Street, New York, Plants, Seeds, Bulbs and Sundries.
METZNER FLORAL COMPANY, Mountain View, California, U.S.A.—Plants, Seeds and Bulbs.
VILMORIN, ANDRIEU ET CIE., 4, Quai de la Megisserie, Paris.—Plants.
C. A. NOBELT, Gembrook Nurseries, Emerald, Victoria, Australia.—Fruit trees.
W. ATLEE BURPEE & CO., Burpee Buildings, Philadelphia, U.S.A.—Seeds.

GARDENING APPOINTMENTS.

[Correspondents are requested to write the names of persons and places as legibly as possible. No charge is made for these announcements, but if a small contribution is sent, to be placed in our collecting box for the Gardeners' Orphan Fund, it will be thankfully received, and an acknowledgment made in these columns.]

Mr. E. J. Faulkner, previously Gardener at Southwick Park, Tewkesbury, Gloucestershire, as Gardener to F. J. TENNANT, Esq., Lympne Castle, near Hythe, Kent.

Mr. George Bogie, for the past 12½ years Gardener to the Rt. Hon. the Countess of Longford, Pakenham Hall, Co. West Meath, as Gardener to Lady DENNIS, Arlinton, Midlothian.

Mr. P. Jenkins, late of Warren House, Stanmore, as Gardener to Col. JAS. CLIFTON BROWN, Holmshurst, Horsham, Sussex.

Mr. James Colville, late Gardener to GEORGE B. BUXBRIDGE, Esq., Esplanade, Morpeth, as Gardener to Colonel NAPIER CLAVERING, Axwell Park, Blydenon-Tyne. [Thanks for Is. for R.G.O.F. box.—Eds.]

Mr. Geo. W. Beckett, previously Gardener to J. H. RICHMOND, Esq., Hatfield, Cambs Bay, Anglesey, and formerly Foreman at Rolleston Hall, Barton-on-Trent, as Gardener to Mrs. ELLISON, Cambray House, Heswall, Cheshire.

Mr. H. P. Knight, for six years Foreman at Brigden P. D. JEFFREYS, C.B., at Duddington Place, Sittingbourne, Kent, as Gardener to the same gentleman.

Mr. G. C. Wareham, for the past 8 months Gardener to the late T. S. BALLIN, Esq., at Penton Hall, Staines, as Gardener to H. CULLERNE BOWN, Esq., at the same place.

Mr. W. H. Marsh, Foreman for the past 3 years and 8 months at "Bevendean," Oxshott, as Gardener to the LADY TREDEGAR, Honeywood House, Oakwood Hill, Surrey. [Thanks for Is. for R.G.O.F. box.—Eds.]

ANSWERS TO CORRESPONDENTS.

AZALEA INDICA: E. M., Thirsk. Your plant of *Rhododendron indicum* (Azalea indica) is attacked by a fungus known as *Exobasidium*, a disease that causes gall-like swellings on the parts attacked, generally the leaves, but in your case, as far as can be judged from the specimen, the part attacked is the flower. It has been found that if the galls are sought out and removed to the fire before they develop any colour the plants do not suffer from the fungus in the following year.

BEES IN A LAWN: W. E. and T. C. The bee burrowing in your friend's lawn is a wild species called *Andrena cinerea*. The insect is not harmful in gardens, and not at all common.

CYDONIA MALLARDII: T. Williams. The Quince which received the R.H.S. Award of Merit on August 31, 1915, under the name *Cydonia Mallardii* is a variety of *C. japonica*—*C. japonica* Wilsonii. The fruits ripen freely in this country.

NAME OF FRUIT: J. C. Apple Lord Burghley.

NAMES OF PLANTS: Farley. 1 and 5, *Libocedrus decurrens*; 2, *Brodiaea uniflora*; 3 and 4, *Fritillaria Meleagris* vars.; 6, *Glyceria aquatica* var. *variegata*.—*J. D. 1*, *Kerria japonica flore pleno*; 2, *Styrax serrulatum* (*Bot. Mag.*, 5,950); 3, *Staphylea colchica*; 4, *Rubus spectabilis*; 5, *Crataegus Pyracantha*.—*N. D. Hort.* The Amaryllid is *Sprekelia formosissima*, *Jacoea Lily*. The shrub is *Lonicera involucrata*. The flower, obtained from Jamaica, is probably *Zephyranthes carinata*. The *Cyclanthera* belongs to the order you name. It requires a warm house.

PEACH TREES DYING: J. H. It is impossible to give any opinion on the cause of failure of the trees without examination of specimens. In all probability there is something wrong with the roots; but we should be in a much better position to advise you if you could send some leaves and pieces of the stem for examination.

SODA SPRAY V. BORDEAUX MIXTURE: Caltha. The chief advantage of soda mixture over Bordeaux mixture is that the former is the easier to make; further, it does not impart any whitish colour to the trees sprayed. The effects are about the same at the time of spraying, but the soda does not last so long in an effective condition. The method of preparation you give is correct.

TONK'S ROSE MANURE: J. W. J. There is a manure sold as "Tonk's Manure" which is compounded as follows:—

Superphosphate	12 parts
Nitrate of Potash	10 "
Sulphate of Magnesia	2 "
Sulphate of Iron	1 part
Sulphate of Lime (Gypsum)	8 parts

It is used in the proportion of ½ lb. to the square yard. It should be borne in mind that all the manure sold as Tonk's may not be made up in the same proportions, or of the same ingredients.

Communications Received.—C. H. P.—G. Forrest—W. S.; Old Subscriber—H. F. W.—E. D.—B. B.—W. E. T.—P. S. E.—J. D.—T. J. M.—W. H. P.—W. B. of A. Constant Reader—W. T.—W. H. D.—H. R. D.—C. M. C. (New York)—G. W.—Roy. Bot. Soc.—Sir D. M.

THE

Gardeners' Chronicle

No. 1535.—SATURDAY, MAY 27, 1916.

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LATE-FLOWERING DAFFODILS.

AT the time when I now write (May 5) most of the Trumpet Daffodils have gone over, and stand, rather dreary-looking objects, with their stained and dying perianths lying on the still persisting yellow cups. In these circumstances one looks with special pleasure on a bed of the bicolor Trumpet Grandee which appears at this time particularly clean and fresh. Scarcely less pleasing is the self-yellow Trumpet Captain Nelson, which has also just come into flower. For some reason, this very distinct Daffodil has been removed from the R.H.S. list of Daffodils, and placed at the end among obsolete forms, a treatment which, I venture to think, is hardly deserved. The colour of the flower has not the deep orange shade of Maximus or King Alfred, but is a particularly clean and clear, soft yellow, while the form of the cup is open and crinkled at the edges, and is now looking its best. The only other yellow Trumpet variety now flowering well in the garden is Queen of the West, but seeing that it was planted here for the first time last autumn, it is early yet to define its season with any certainty, and even now its flowers seem to have seen their best days. I believe that Captain Nelson will outlast it.

It is surprising with what unanimity one's friends seize upon the time when the Daffodils have begun to fade to ask to be shown round the garden, and therefore a special value attaches to those late flowers which are still looking clean and bright, since they afford ground for the hope that our friends may not think they

have had their journey for nothing. Queen of the North is gone, and its flowers are hanging limp on their flower-stalks—a sorry travesty of the beauty they once knew—but White Lady, and Royal Lady, which differs from White Lady only in having rounder and more imbricated perianth segments, are still good, and of bright cupped flowers, Amber, Aftermath and little Tom Tit are all useful at this time, together with a very few of the late poets, such as Glory, while in the Poetaz section Elvira is proving its value as a garden Daffodil. Among the white Trumpets Treasure Trove is one of the few still in good condition. This fine flower, with its grand foliage, never fails to attract the notice of those visitors who are sufficiently careful to look at the individual flowers.

I ought to add a word as to the great length of time Dorothy Kingsmill remains in good condition. One of the earliest of the Triandrus varieties to open, it outlasts nearly all the flowers of its section, and though rather dumpy and short of stem, so that it is not seen at its best in the garden, it makes a lovely flower when gathered and brought indoors. Little Dirk, which is just opening, has a small flower on a tallish stem, and is valuable chiefly for its lateness; nevertheless the flower is neat and well formed.

A few plants of the old Pheasant-eye N. recurvus are beginning to appear, and these with their double form will bring the Daffodils of the year to an end. In spite of our modern development, which has almost established a new race in the poeticus group, there is none among the newcomers possessing a perianth of such good substance and so firm, resisting, as it does, the effects of rain and sunshine with equal indifference; nor, I think, is there any of better perfume. Among the new Poets, however, I have found Socrates a good laster, and in this, the latest group, lasting powers are of special importance in the garden.

The end of the flowers raises the question of lifting and harvesting the bulbs. Where varieties have become accidentally mixed, it is certainly best to move them when in flower to the groups to which they belong, and if this be done carefully, it seems to cause little detriment to the bulbs. Where Daffodils are grown among Roses in prominent positions, as on the lawn, I am already lifting the bulbs as fast as the flowers go over. They are taken away at once, and heeled into a trench in the kitchen garden, and if the weather proves too dry, a good soaking of water is given, but this has been unnecessary this year; while the place of the bulbs in the Rose beds is taken by a little manure and old, stacked turf, broken down and chopped in pieces. This involves a little more trouble than lifting later and drying the bulbs at once, and will only be practised where the position is important enough to warrant it, or where the bulbs have been allowed to become so thick that they may affect the Rose foliage. The general lifting will stand over till the end of the month. *Emperor.*

PENTSTEMONS: THEIR VALUE IN THE GARDEN.

(Continued from p. 267.)

FRAMES AND SOIL FOR PROPAGATING

Cold frames are the best places in which to insert the cuttings, no further shift being then required, and with the young plants they will furnish the protection required during the winter months. The ordinary type of wooden frame used for Calceolarias and similar plants is excellent for our purpose; they should not be too deep, or the plants may become weak and drawn on account of reduced light. Should the frames, however, be somewhat deep, the difficulty may easily be remedied by placing a good depth of some porous material in them before adding the soil, thus bringing the cuttings well up to the light. In all cases good drainage should be ensured by this means, any rough material at hand being used, such as brick rubble or clinkers, to provide a good layer, which should be beaten level, and afterwards covered with an inch or so of fine ashes to prevent the soil from working down into the rougher drainage. If the frames are prepared in this way the soil in them will be kept sweet and well drained all the winter, as any excess of moisture will escape, and there will be no trouble with the green scum which is so prevalent in frames lacking good drainage during winter. The compost will need a little care in its preparation. This, when complete, should be light and porous, and such as will not cake on the surface. All the materials should be passed through a sieve of a quarter-inch mesh, as the soil must be fine in order to enable it to settle closely about the cuttings. If some loam, of a fibrous and open nature, of the kind used for potting, is available, three parts by measure of this may be used, to which add one part of matured leaf-mould and a good sprinkling of sharp, silver sand. Should the loam used be of a somewhat close or heavy nature, it would be well to add a quantity of old mortar rubble, well broken and passed through the sieve. Old wood ashes may be used fairly freely; but new wood ash should not be used for this purpose, this being rich in potash. A greater quantity of leaf soil than that named is not advisable, as too much moisture is retained by it. All the materials used should be well mixed by turning several times. The amount made up will, of course, depend upon the number and size of frames used. Before placing the soil in the frames a layer of the rough parts obtained in the sifting may be spread evenly on the ashes, then add the fine soil to a depth of 6 or 8 inches. The next thing is to tread the soil down firmly. In making up frames for this class of plants the soil is frequently left insufficiently firm. It should be mentioned here, however, that the compost should be rather dry before the treading is done. Should the soil be somewhat moist, a good plan is to spread it in the frames and leave it loose for a day or two, placing the lights on in case of rain. When firming the soil, see that the sides and corners are not neglected, and use the back of a rake during the process to keep a level surface. When ready the soil should be about 4 inches in depth, level, compact, and with no loose places. I do not advise a greater depth of soil than this, as the plants are taken out before making any great amount of roots, and a greater depth of soil than is actually necessary means the retention of too much moisture. Where deep frames are used, the cuttings should be raised by increasing the

lept of the drainage rather than of the soil, which at the same time is more economical of loam. The cuttings, having been prepared, may be inserted. The value of silver sand for all propagating purposes is well known, and, though it may not be absolutely necessary where a light and open compost is used, will do much towards securing the striking of a large percentage of cuttings. Some people spread a layer over the entire surface, but a better plan, from an economical point of view, is to use the sand where each row of cuttings will come, the latter being placed in straight lines. The way I proceed is to use a

sharply, and the end cut squarely off. In entering the soil the dibber carries some of the sand down to the bottom of the hole, and some will also fall around the cutting after it is placed therein. The soil is then pressed about the cutting with the dibber, and care taken not to injure the stem while doing this. Give 3 inches of space between each cutting and a like distance between the rows. They are often put closer where space is restricted, but if too close there is always a difficulty in taking up the plants in spring without breaking the roots; so if there is plenty of frame room 3 inches at the very least should

require most care and attention. If this is given, and previous operations have been performed properly, the grower may reasonably expect to get from 80 to 100 per cent. of his cuttings to root. *S. Ashmore.*

(To be concluded.)

NOTES ON CONIFERS.

XIV.—CUPRESSUS OBTUSA.*

LIKE the other Japanese species, *Cupressus pisifera*, dealt with in my last article (Jan. 29, p. 58), *Cupressus obtusa*, the Hinoki Cypress (see fig. 115), was introduced in 1861 by John Gould Veitch. Though widely spread in cultivation it appears to be less common than *C. pisifera*. From that species it may be easily distinguished by its subacute leaves, the foliage being dark green on the upper side of the branchlet, but marked below with prominent Y-shaped white markings which are formed by a coating of wax on the inner margins of the lateral leaves, and on both margins of the ventral leaves.

Elwess states that this tree appears to be indigenous only in the central and southern parts of the main island of Japan and in Kiu-siu and Shikoku; but it is so highly valued for its timber, which is considered the best of all soft woods in Japan, that it has been largely planted in many places. In its native habitats it reaches an elevation of from about 2,000 to 5,000 feet, being associated with *C. pisifera* and other Conifers. It sometimes reaches a height of 100 feet or more, and a girth of over 12 feet; while Maye states that on good soil it is occasionally 140 feet high and 7 feet in girth, with a stem clear of branches to 60 feet.

C. obtusa has recently been discovered in Formosa, growing on Mount Morrison, with leaves, cones, and seeds somewhat smaller than the Japanese form.† It was introduced into cultivation by Captain Matsumura, Imp. Jap. Navy, who sent seed to Bayfordbury in 1910, but only one seedling was raised.

Numerous varieties, some of them very distinct and peculiar, have arisen in cultivation. Among the best-known are:—

Var. *filicoides*, Masters, in *Kew Handlist, Conif.* 45 (1896), Elwes and Henry, *op. cit.*, V. 1186 (1910). Denser and dwarfier in habit than the typical form, the branches being thickly furnished with short, fern-like, opposite branchlet systems, nearly equal in size.

The variety was introduced in the same year as the Japanese type, and is not uncommon in cultivation. It is usually shrubby in habit, but specimens up to 20 feet high are on record.

Var. *tetragena aurea*, Masters, in *Journ. Linn. Soc. (Bot.)*, XXXI., 355 (1896), Elwes and Henry, *op. cit.*, V., 1186. Shrubby in habit, with tufted branchlets, the pinnae arising in varying angles at different planes. Ultimate branchlets tetragonal, scarcely compressed; young shoots golden-yellow, becoming ultimately dark green. A very pretty form, which arose at Barron's Nursery, Elvaston, in 1873. There is a good specimen of it in the Crawley Nursery at Woburn.

Var. *cycopodeoides*, Masters, in *Journ. Linn. Soc. (Bot.)*, XXXI., 355 (1896), Elwes and Henry, *op. cit.*, V., 1186. Dwarf in habit, with closely set branchlet systems, irregularly arranged, and crowded at the extremities, with closely appressed, elongated, obtuse leaves. Foliage deep green in colour. Introduced in 1861. I saw a specimen of this variety, 20 feet high, by 16 inches in girth, at Highnam Court, Gloucester,

* *Cupressus obtusa*, Koch, *Dendrologia*, II., Part 2, p. 168 (1873); Masters, in *Journ. Linn. Soc. (Bot.)*, XXI., 355 (1896); Kunt, *Fauna's Man. Conif.*, 220 (1900); Elwes and Henry, *Trees of Great Britain and Ireland*, V., 1185 (1910); Clinton-Baker, *Illus. Conif.*, III., 52 (1913); Bean, *Trees and Shrubs*, I., 448 (1914).

† *Loc. cit.*, V., 1188.

‡ This Formosan variety was described as *forma formosana* by Hayata in *Gard. Chron.*, XLIII., 194 (1908), and in *Journ. Coll. le Tokyo*, XXV., 208 (1908). The tree attains a height of 130 feet in the mountains of Formosa.



FIG. 115.—CUPRESSUS OBTUSA.

straight rod or cane the width of the frame, drawing a mark on the soil against this with the dibber and running sand along this mark. The sand should be dry, and will then run from the hand freely. To put cuttings in with a dibber tapering to a fine point is to court failure. Such a hole must be made as will allow the cuttings to rest firmly and evenly upon the soil. If a space is left about the base of the cuttings few will form roots, as damping will be almost certain to take place. The dibber, therefore, should be a little thicker than the cuttings, not tapering

be given. Keep the cuttings fresh while the work is in progress, as if allowed to become limp they may be some time before reviving. As each frame is filled a good watering-in should be given. A mere damping of the surface is no good, but all the ground should be gone over several times, to ensure a soaking of all the soil, as this will settle the latter about the cuttings, and if any are not put in quite as they should be it will do much to make them secure; the watering-pot should have a fairly fine rose. The first few weeks following their insertion is the period when the cuttings

in 1903, and good examples are also recorded from Tregothnan and Coldrenick in Cornwall, and Chipping Camden in Gloucestershire.

Cupressus obtusa does not attain to any great size in this country, and no trees of 50 feet are on record. For the best specimens one must go to the west of England. The largest I saw there was a tree at Carclew, which, in 1908, was 40 feet high by 3 feet 10 inches in girth. At Westonbirt, in the same year, I came across a specimen 39 feet high by 2 feet 9 inches in girth. Elwes records one at Bicton as being 36 feet by 4 feet 4 inches in 1906, and another at Dinas Mawddwy, 30 feet by 2 feet, in 1906. This Conifer has also done well at Tortworth, Castle Kennedy (Scotland), and Woodstock (Ireland); there being at the latter place a tree 38 feet high, with layered branches.

Cupressus obtusa, which is known in Japan as Hinoki, yields a timber which is highly valued for buildings, including temples and palaces, and interior work. The bark is employed for roofing temples and palaces. This species and *C. pisifera* are largely used by the Japanese for dwarfing. Some plants treated in this way, though only about 2 feet high, are said to be nearly a century old. A. Bruce Jackson.

FLOWERS OF JAPAN.

No horticultural theme could be more beguiling than "the flowers of Japan," albeit that a merely professional writer would perhaps find reason for diffidence in giving rein to his descriptive art in the memory of the writings of Loti and Hearn, where are painted in unfading colours the splendours and beauty and charm of the Isles of the East.

Mr. E. H. Wilson, who dealt with "Flowers of Japan" in a recent lecture* to the Massachusetts Horticultural Society, was therefore wise in disdaining attempts to conjure up before his audience pictures of the vegetation, and in confining himself for the most part to telling the story of the floral exploration of Japan.

It is to officers of the Dutch East India Company that Europe owes its first introduction to the floral wealth of these islands. Luckily enough, among these officers was Von Siebold, who lived in Japan from 1823-1830, and who subsequently established a nursery at Leiden, Holland, whereto he imported the first Japanese plants—*Malus floribunda*, *M. Sieboldii*, *Wistaria chinensis* (multijuga), and *Prunus pendula*.

To Carl Maximowicz—would that his name had been briefer—we owe our early knowledge of the forest flora of Japan and the introduction of many good garden plants, including *Berberis Thunbergii*. The work of the British collectors, John Gould Veitch (1860), Fortune (1860-61), and Mariès (1877-80), has been so fully described in these pages that we need not, in spite of its great importance, describe it again now. In this period, brought by these collectors or sent by Japanese amateurs, were introduced *Vitis Coignetiae*, *Prunus Sargentii*, *Rosa multiflora*, *R. Wichuriana*, and *Crimson Rambler*. The same period of the '60's saw Dr. Hall travelling and collecting in Japan, and it is to him that America owes the independent acquisition of *Lonicera Halleana*, *Magnolia stellata*, *Malus Halleana*, and the first consignment of *Lilium auratum*, which flowered in America in July, 1862. Other Americans followed Hall. Prof. Clark, who organised the Agricultural College at Saporu, sent to America seeds of *Magnolia Kobus*, *Cercidiphyllum japonicum*, *Syringa japonica*, *Actinidia polygama*, and many another plant now growing in the Arnold Arboretum. The richest harvest of all was gathered in by Prof. Sargent, director of the Arnold Arboretum, who visited Japan in 1892. Sargent's introductions include the deciduous Oaks, other

broad-leaved forest trees, *Picea Glehnii*, *Abies sachalinensis*, various species of *Malus* and *Acer*, *Rhododendron Kaempferi*, and many other plants.

After describing the main features of the vegetation of Japan, Mr. Wilson illustrates the Japanese love of flowers by reference to the facts that an essential part of every lady's education consists in training in the art of flower arrangement in the house, and that from no house, at no time of the year are flowers or foliage, or fruiting branches absent.

The floral year is ushered in in January by the

MELIOSMA CUNEIFOLIA, FR.

The most northern areas of the province of Yunnan, W. China, though the real home of the *Rhododendron* and other shrubs of the *Ericaceae*, are not so productive of deciduous shrubs as Szechuan and other regions of Central China. Still, many of the species discovered in the latter district run well west and northwards into the higher mountain ranges, and are there seen, in sheltered situations, in greater beauty and to greater advantage than even at their optimum.



(Photograph by Mr. George Forrest.)

FIG. 116.—*MELIOSMA CUNEIFOLIA* IN CHINA.

blossoms of *Prunus mume*, March and April is the season of the Cherries, of which hundreds of varieties exist, ranging in colour from white and yellow to pink and deep rose, pendant or erect, shrub or large tree, and all wonderfully beautiful. At Koganzu, a village 10 miles from Tokio, is a Cherry tree avenue, 3 miles long, planted in 1735. Many of the trees are from 60 to 75 feet high, with trunks 10 to 12 feet in girth, and crowns 50 to 60 feet through.

Mr. Wilson tells of *Wistarias* with racemes 64½ inches long, and thousands and thousands of racemes, of mountain *Paeonies* and Japanese *Maples*, pale shades of which we grow and love here. There the Japanese gardener has choice of over 300 varieties of *Maple*, so that, although modernity has laid its hand even on Japan, we need have no fear that the land of flowers will not always remain the Mecca of the faithful gardener.

They include *Meliosma cuneifolia* (see fig. 116), and in the late spring or early summer, from May to July, few of the deciduous shrubs of that area can compete with it in grace of habit, wealth of bloom, and delicacy of fragrance. The latter much resembles that of our own Hawthorn, as stated by Mr. W. J. Bean in *Trees and Shrubs Hardy in the British Isles*.

The plant is fairly abundant on the southern flank of the Lichiang range at from 8,500-10,000 feet, but is nowhere common, nor is it ever found in masses, but generally as isolated specimens. It grows in the open, reveling in sunshine on the sheltered margins of deciduous forests, generally near streams or some other source of permanent moisture.

The shrubs attain a height of almost 30 feet—24 feet may be stated as a fair average. The leaves are long and narrow, more or less obovate, from 4 by 1½-2½ inches, margins roughly and regularly serrate, the upper surface roughly hirsute, the lower surface at first slightly downy, later only downy on the prominent veining. The flowers are a soft creamy-white, almost pure white in the fullest development, and as seen in fig. 116, produced in great

PUBLICATIONS RECEIVED.—*Annals of the Missouri Botanical Garden*. Vol. II., No. 4, November, 1915. (St. Louis, Miss., Board of Trustees of the Missouri Botanical Garden.)

* See *Florists' Exchange*, April 8, 1916.

profusion in long, gracefully pendulous, pyramidal panicles. The inflorescence is terminal, of large size, being 10-15 inches in length, and almost as much in breadth. The corollas are one-sixth to one-quarter inch in diameter; the fruits are ovate, a quarter by fully an eighth of an inch in size, and black in colour.

Despite the plant's free-flowering character, in Northern Yunnan the species is a poor fruiter, for in the immature state most of the berries are attacked by a maggot, only a very small percentage escaping injury.

The species was introduced by Mr. E. H. Wilson in 1901, and first flowered in Messrs. J. Veitch and Sons' nursery at Coombe Wood in July, 1909. *G. Forrest.*

HENRY VIII. AS A LANDSCAPE GARDENER.

In the following lines I have reproduced a number of instructions which were given personally by Henry VIII. with reference to alterations the King desired to be carried out in the garden at Eltham Palace.

These instructions, which are preserved to-day in a manuscript in the Public Record Office (Exchequer Accounts, 497-1), contain also notes referring to the Palace. We will, however, ignore those relating to the buildings and confine ourselves to those which refer to the garden. The instructions respecting the various works to be executed are sufficiently explicit to enable us to follow in some degree the present condition of the ground. The directions are not only of interest in themselves in their relation to a particular garden, but also tell us something of the arrangement of mediæval gardens in England generally, though it is doubtful whether mediæval gardeners were generally expected to arrange arboreal pleasaunces with reference to nocturnal escapades.

Eltham Palace lies in the centre of Eltham, a village which is now almost a suburb of London. From the public highway the great hall of the Palace may yet be seen.

The first of the King's directions (which the reader will see must have been personally given) refers to the making of an alley.

"Item to make an alei to walk in, of XVI fote wyde, from thende of our drawe bridge on the south syde of our said manour alongest [along] the south syde of our moate estwarde and so rotinouryng the est syde of oure moate north wardes vnto our gardeyne gate ther; with bankes on euery syde of the same alei set with quyk settes of thornes, and that to be kept and kyte [cut] of the hight of [blank space] fote, and the ground therof to bee leyvylled according to the good facion of the same."

The bridge and moat may still be seen within but a few dozen yards of the main London highway.

The next notes give directions for the construction of an arbour.

"Item to make a square herber vpon the south syde of the same alei, and the vtter [outer] borders to bee sett with quyk sett of thorneys, and a close herber to bee made within the same arber with a light frame of tymbre for quyk settes to be sett to growe over the same frame."

"Item to sett a clyft pale [that is, a paling made of pales got out by pale cleavers] vpon the outsyde of the bankes of all the said borders and aleys from the bridge vnto the gardeyn gate for savegarde of the quyk settes from bestes [beasts]."

"Item to set a substanciall pale vpon the syde of the alei nexte the moate, framyd and with sawen borde and naylede; of such height that from the tyme that we goo oute of our lodging that waye into our gardeyn we may goo secrete and betwixt the pale and the mote; the grounde to be censed and levelled and the trees taken away that the quyk settes may have relief of the son [sun]; and to sett plum trees, cherye

trees, with suche other trees, in a rowe, to shaddowe them that shote at the Buttes" [to shade those shooting at the archery butts].

The desire of King Henry VIII. to be able to go secretly into the garden is not without interest, considering the many successful efforts of Fate to entrap that monarch into matrimony. In the next note we shall see this royal victim of Cupid's dart again expressing his desire to "goo secretly into our gardeyn." And we shall also read the order given for the construction of a brick wall and substantial doors, with lock and key into the bargain!

"Item to make a bryke wall from the south wall of our orchard, westwardes alongest by the gardeyn and our wood-yarde to the mote ther, of suche height that we may goo secretly into our gardeyn; and 2 substanciall dores to bee made in the same wall at the aleys ende going into the said gardeyn, with a plate lokk vpon our pryvye key and a by key to the same."

The next direction is for the removal of a hill near the garden!

"Item to take awaye the hill standing in our park on the south syde of our orchard."

Our final entry from this MS. reads:—

"Item to dyg vpp all the welowe trees, nut trees, asche trees, thornes, with all suche other trees and bushes standing oute of course within our orchard, and newe settes to bee sett in ordre, of diuerse trewtes conveyent for an orchard."

It would be interesting to know more of the plants in the Eltham garden in the Middle Ages, as well as something of the gardeners, but our MS. deals, as has been seen, more with trees—Willow, Nut, Cherry, Plum, &c., and shrubs, than with the smaller and brighter plants.

In the *Letters and Papers of the Reign of Henry VIII.* (Rolls Series), however, we find in Vol. 2 that John Colynson was keeper of the garden; and in Vol. 21 of the same series we read of men "drawing furrows" and taking up "White Canterbury." *H. Littlehales.*

TOMATO AND CUCUMBER EXPERIMENTS.

At its Experimental and Research Station, Turner's Hill, Waltham Cross, the Nursery and Market Garden Industries' Development Society has held, during the past week, a series of demonstrations of the year's experiments.

The society was formed during 1914 to devote special attention to the glasshouse industry, and the chief object of its work is "the elucidation of the many problems to which the growth of fruit and vegetables under glass gives rise." Last year's experiments were necessarily of a preliminary nature. It was necessary to standardise the soil of the five Tomato houses, so that the experiments at present being carried out are practically a development of last year's manurial and other tests with Tomatos and Cucumbers. Later on it is hoped that funds will permit the erection of special glasshouses for experiments in the cultivation of more varied crops.

At present all the work is carried out under glass, and on similar lines to those followed by the best market growers. Tomatos are growing in pots and in the ground, and Cucumbers in borders. One of the objects of growing Tomatos in pots is to ascertain the effect of lime on the growth and how it compares with chalk. Although it is too early as yet to form definite conclusions, the appearance of the various plants indicates that there is a decided limit to the beneficial effects of lime. The same variety, Holmes's Tuckwood Favourite, is grown throughout the pot tests. The 12-inch pots are in rows 2 feet 6 inches apart, and in the various series in which caustic lime and chalk are mixed with the local light sandy loam and with the heavy Waltham Abbey loam, the most promising plants are those with not more than 1 per cent. of lime or chalk. In the sets

where over 2.5 per cent. is used the growth is weaker and the trusses are smaller.

No definite conclusions can, at present, be drawn from the tests as to the quantity of straw manure required for pot culture of Tomatos.

There is a marked difference between the appearance of the Tomatos planted out in the various houses and those in pots in the "isolation" house. All the planted-out examples are much more thrifty, shorter jointed, more forward, and are fruiting much nearer to the soil. These facts form an object-lesson in the greater value of planting out. Two large houses are devoted to a trial of the effect of overhead damping on the setting of fruit. Great care has been taken to ensure the accuracy of the tests. Four varieties, in identical numbers, are growing in each house, and the soil and manurial treatment are the same. Damping is done on fine mornings between 10 and 11 o'clock; the operator passes between the rows damping the plants from above with a fine spray. To compensate for the mechanical disturbance the plants not damped are tapped with a cane on the same days and at approximately the same time as the others are damped. So far the plants not damped are the best. They are shorter jointed, are setting more freely, and the fruits appear to be rounder in shape.

In experiments with Tomatos judgment must be reserved until the dates of gathering fruit and the weights have been ascertained. The standard manurial treatment consists of 2 lbs. lime, 14 lbs. straw manure, ½ lb. bone meal, ½ lb. bone flour, ½ lb. ground hoaf, and ½ lb. sulphate of potash per square yard.

House No. 5 serves a double purpose. Twenty-five different varieties are grown in rows across the house, which is divided longitudinally by the pathway. Half the plants are "stopped" after the fifth truss and the others allowed to extend unchecked. At the same time a trial is made of many varieties grown under identical conditions. In all the houses the Tomatos were planted on March 8 to 10 inclusive.

Cucumbers are grown in five houses, the variety Butcher's Disease Resister being used throughout. Records of soil temperature, air temperature, amount of radiation, rates of growth, respiration, photosynthesis, transpiration and air humidity are being kept and their effects on fruit production duly observed.

The Cucumber experiments are intended to ascertain whether turf is essential in the formation of a Cucumber border, and what is its value compared with second spit loam; and whether second spit loam or equal parts of second spit loam and turf could be used in its place.

HOME CORRESPONDENCE.

(The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

METEOROLOGISTS AND "SUMMER" TIME.—

In accordance with the provisions of the Summer Time Act, Greenwich mean time will continue to be used for all meteorological observations and publications, so that no discontinuity will be caused during the period when summer time is in force. But besides the observations which are made by regular observers, many meteorological phenomena of various kinds are from time to time recorded or reported, and it is highly desirable that there should be no ambiguity in these reports, which are often of much interest and importance. The Council of the Royal Meteorological Society desire to draw attention to the necessity of stating precisely the time of occurrence in all such cases, and whether the times quoted refer to Greenwich mean time or to summer time, since the omission of this information may render the record of the phenomenon useless for meteorological purposes. Such occasional observations form a valuable addition to those which are made at the permanent observing stations and supplement them usefully. It is therefore essential that they should be recorded with precision. *H. G. Lyons, President Royal Meteorological Society.*

MISTLETO ON THE PEAR.—Some two or three years since a well-known authority stated that Mistleto did not live on the Pear. There is a specimen here on a pyramid tree of Beurré Giffard upwards of 2 feet across. It is six years since it commenced to grow, and I do not know if it was planted by human agency or whether a bird placed the seed in position. Older specimens of Mistleto are growing on Apple trees about 70 yards from the Pear tree. *H. H. Divers, Belvoir Castle Gardens, Grantham.*

HIGH SCIENCE AND LOW SCIENCE.—I do not see *Science Progress*, but *Public Opinion* gives prominence to the following:—

"We men of science are apt to complain of want of recognition of our work; but, to be frank, most of our work is really of little value," writes Sir Ronald Ross in his *Science Progress* (April).

"Amongst the enormous output of scientific literature, by far the largest proportion of the papers are of a petty nature—records of hypotheses, records of a few haphazard observations, inconclusive, mere lumber to be thrown into the dusty attics of knowledge. Such works bear to the great works of science the same relation that the artist's pot-boiler bears to the classical picture."

"Do not let our hearts be too uplifted with pride in stuff of this type. We think that when we have published our records we have given the world something to remember. But the world, like the individual, cannot remember every trifling occurrence; and the trifles of science are like the trifles of our daily life—to be forgotten to-morrow. When the man comes who shall finally cultivate the whole field in which we have been picking Daisies, he will probably do so without troubling even to consider our little excursions."

"After all, what is the difference between high science and low science? The one is the solution of difficult problems, the other the record of isolated observations. The latter is sometimes useful indeed—sometimes even leads to great discoveries; but, successful or not, it does not merit the honour which we give to the former. Here we have a work which is really an event in human history, if men were only intelligent enough to recognise it. Great problems once solved are always solved; and the solutions are milestones in the life story of the race."

This is either sound sense or it is discouraging and foolish. I cannot but think it is the latter. How many were picking Daisies before Lister or Pasteur? How many are picking Daisies to-day? In the world of horticulture and agriculture I know of a dozen problems on which practical men are waiting for light and leading from scientists, several of them of great national importance. Does Sir Ronald Ross mean that all the workers engaged on them who are not immediately obtaining results should cease their work? Who knows when and where the man who shall "finally cultivate the whole field" will come from and when? Horticulturists know something about cultivation. Let me speak in parables. Supposing a ten-acre field is cut up into allotments and let out to 100 men. All will not obtain the same results, but all will be benefited and many will get splendid crops. Or, again, a gardener is asked to take in a piece of waste ground. He possibly sends first for a woodman to fell some trees growing on it, then some labourers clear off the scrub, then some drainers come along and put in drains, then the gardener trenches and manures the land preparatory to putting in a crop of Potatoes to finally clean it. The next season it is in good heart and ready for the purposes he and his employer had in view. Is it not the same in science? Pioneers are required in every class of work, and entering upon the unknown, which science is always doing, many wrong roads must inevitably be taken, but among those who take them there will surely be someone who will strike the right track—"working up from the practical rather than downwards from the theoretical," to quote Professor Bayley Balfour's striking words at the International Conference on Horticultural Education. *W. Cuthbertson.*

SWIMMING BATH IN A CONSERVATORY.—The illustration in fig. 117 shows a swimming bath in a conservatory, at Fountain Dale, Blidworth, Mansfield, the residence of F. Houlton, Esq. The conservatory is 75 feet long by 25 feet wide, the bath measures 60 feet by 15 feet, and holds 20,000 gallons of water, which is turned on only in the warmest months of the year, May till September. What impressed me most during a recent visit (April 24) was the healthy appearance of a number of Roses growing all over the roof rafters. Such well-known varieties as Mrs.

Edward Mawley, Mrs. W. J. Grant, Papa Gontier, Frau Karl Druschki, and Jules Gravereaux were masses of fine blooms. Mr. Houlton informed me that he had been cutting a quantity of blooms for some weeks past. A stage 4 feet wide runs all round the house, and it was furnished with well-flowered plants of Cineraria, Primula obconica, P. kewensis, P. malacoides, Carnations, and other plants. Baskets of plants hanging from the roof-rafters made a very pleasing feature, and added interest to a very unusual plant house. *A. C. Lehan.*

NOSEGAY PELARGONIUMS (see pp. 175, 183, 212, 225, 237, 274).—I am much obliged to Mr. Brotherston (p. 225) for mentioning the date when Donald Beaton left Shrubland Park. I was at school when he died, and, not having had the pleasure of a personal acquaintance with him, have not been so diligent in piecing together his history as I might have been. Pelargonium Lady Middleton may have been his best variety of the Nosegay strain, in his own opinion, but that does not seem to have been shared by the general public. As late as 1865 a writer in the *Florist and Pomologist* said that Cybister and Stella were two of his best sorts. This is

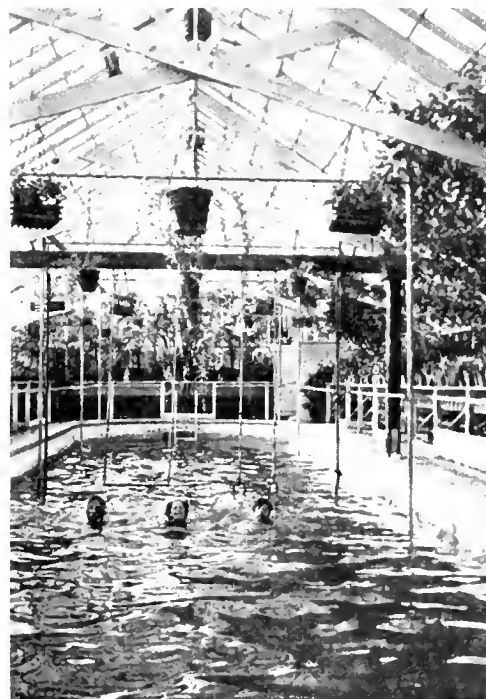


FIG. 117.—SWIMMING BATH IN A CONSERVATORY

further confirmed by the fact that Messrs. Henderson and Sons, of Maida Vale, named one Pink Stella in 1866, and Messrs. Downie, Laird and Laing named another Rose Stella in 1867. Both had First-class Certificates, which would indicate high quality and the popularity of the original Stella. Peter Grieve, writing in 1868, mentioned Stella, Spread Eagle, Pink Pearl, Amy Hogg, Cybister, and Indian Yellow, as varieties of Nosegay Pelargoniums raised by Donald Beaton, and said the latter had "left them nearly all that can be desired." He was speaking of them as bedding and conservatory flowers. I am not convinced that P. cucullatum had any part in the making of Donald Beaton's strain of Nosegays, because it would have introduced the two feathered lines on each of the two upper petals, and one or two blotches, according to their size. The result would have been a hybrid so distinct that contemporary writers would have been loud in the praises of the new creation. The hybrid would not have been a Nosegay, because feathered lines are absent from the group to which P. zonale and P. inquinans belong. I was speaking from memory when I said that William Paul put the Nosegay strain into commerce, but will take the first opportunity to rectify that if wrong. Certain it is that he was the warmest

advocate of their culture, grew them in quantity as bedding and conservatory flowers, and wrote in warm praise of their merits. He also grew them for winter flowering on much the same lines as are practised to-day. I was speaking in a broad sense when I said that Cannell's Master Christine was a Nosegay. It was too broad in the petal for Donald Beaton's strain, but before I began cultivating Pelargoniums the original type was very indefinite, owing to efforts at improvement. Semi-Nosegays were the result of crossing P. zonale with P. inquinans, but the attempt at improvement did not rest here. By 1871 the distinctions had broken down, and contemporary writers could no longer classify Zonal Pelargoniums into clearly defined sections. One proposed "Ciconium" for the scarlet and Zonal race, and another proposed "decorative Pelargoniums" for the Nosegays and Zonals which had assumed an indefinite type. Stella Variegata was raised from Mrs. Vernon, crossed with Mangles' Variegated, and this shows that Nosegays were not all obtained directly from Beaton's strain. An amateur of Stoke Newington grew tall Pelargoniums like those of MacIntosh of Dalkeith, and bedded them out, putting the tall ones in the centre so as to form a huge pyramid like a single bush. Rollisson's Unique is still cultivated, and I had the original Unique from the late H. Cannell, as recently as 1913. The earliest notice I have of Rollisson's Unique is 1864, but much older favourites are still in cultivation. *J. F.*

APPLE AND PEAR GENETICS.—My friend Mr. F. Bostock has lent me a volume of *The Gardener's and Forester's Record*, conducted by Joseph Harrison. In the light of the apparent reversion of modern workers in genetics attending to generations beyond the first crossing, the following article, which occurs in Volume II., November, 1834, p. 127, seems to be of great interest in the methods of raising new varieties and may well be called to attention:—"Article V. Observations on the mode of raising new varieties of fruits, as practised in Belgium, by Mr. Saul." The Belgians give no preference in the choice of the kinds of table fruit trees from which they select seed, in order to obtain new ameliorated sorts. When the plants have arrived at that stage when they begin to be productive of thorns, the cultivators do not, like the horticulturists in this country, found their hopes on those trees which are exempt from thorns, furnished with large leaves and remarkable for the size and beauty of their wood,* but, on the contrary, prefer the most thorny plants, provided the thorns be long, and the shoots furnished with many buds or eyes, placed near together. This last circumstance appears to them, and with strong reason, to be an indication that the tree will be speedily productive of fruit. As soon as the young plants offer these favourable appearances, affording grafts or buds capable of being inserted into other stocks, that operation is performed—the Apples on Paradise stocks, and the Pears on Quince stocks; this hastens their becoming fruitful. The first fruit is generally very bad, but the Belgians do not regard that as conclusive, of however objectionable a character it may be; they carefully collect the seeds, and a second generation is produced, the fruit of which commonly shows the commencement of amelioration. When the young plants of this second generation have scions or buds proper for the purpose, they are transferred to other stocks. The third and fourth generations are treated in the same manner, and this process is continued until there are finally produced ameliorated fruits. M. Van Mons asserts that the Peach and Apricot, treated in this manner, afford excellent fruit in the third generation. The Apple does not yield superior fruit before the fourth or fifth generation. The Pear is slower in its amelioration, but M. Van Mons informs us that in the sixth generation it no longer produces inferior, but affords excellent fruit, intermixed with that of a middling quality. Intelligent writers, whose testimony may be relied upon, assert that the new and numerous class of fruits which have

* It has been stated by some persons that such trees as these, which the Belgians reject, generally produce early and inferior varieties.

arisen during the last forty years, is far more precious and inestimable in point of quality than all previously known; they refer in this matter more particularly to Pears. Can we say the same nowadays of the productions of the last forty years? Modern new varieties seem to be simply the results of direct crossings or are claimed to be so, though at least one, I understand, suffers under an allegation that the variety was found, and its parentage invented from the characters of the fruit. The further history consists in a damnatory certificate so far as anything but showiness goes, called an award of merit, and a few years later the nur-

rather than definitely aiming at a thorough mongrel. In judging the probable qualities of the young plants (vide *The Orchard and Fruit Garden*: C. McIntosh, London, 1839, p. 191) "the following criterion was given by Van Mons to the deputation sent by the Caledonian Horticultural Society to inspect the gardens of the Netherlands, viz., when a seedling indicated a blunt shape, thickness and woolliness in the leaf, or a fulness of the bud and softness of the bark, it was considered as likely to produce good fruit." This remark would appear to apply rather to the estimation of the probable results of the final crossings. It would be highly in-

The Week's Work.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq.,
Castleford, Chepstow, Gloucestershire.

CYMBIDIUM.—Cymbidiums make splendid subjects for exhibition, and are valuable as cut blooms for the dwelling-house, lasting a long time fresh. The introduction of *C. insigne* (Sanderi) was doubtless responsible for creating renewed interest in the genus, and the popularity has further increased with the hybrids. Older species worthy of cultivation include *C. eburneum*, *C. Lowianum*, *C. grandiflorum*, *C. Tracynum*, *C. giganteum*, and *C. erythrostylum*, while of the hybrids a few noteworthy ones are *C. Doris*, *C. Gottianum*, *C. Alexanderi*, *C. Pauwelsii*, *C. Ballianum*, *C. eburneo-Lowianum*, and *C. Colmaniae*. As a rule the work of re-potting may be done when the flowers are over and the new growth a few inches high. Frequent or annual disturbance of the roots is not advisable, as the best flower-scapes are produced by well-established plants. For this reason when any re-potting is decided upon, sufficient space should be afforded for several years' growth. The majority of Cymbidiums are vigorous-rooting plants with thick, fleshy roots, and they require a rich, retentive rooting medium. Select pots of ample size, and one-fourth fill them with drainage materials, covering this with a thin layer of freshly cut turf placed grass side downwards. A suitable compost consists of turfy yellow loam one-half, the other half a mixture of partially decayed leaves and Osmunda-fibre, with a moderate sprinkling of finely-broken crocks. A little Sphagnum-moss may be included in the top layer of compost, which, though not essential, gives the plants a smart appearance. The Osmunda-fibre should be cut into rather small portions, but the soil may be used in a lumpy condition. Grow the plants in a cool, shady part of the intermediate house, and water them with extra care for a few weeks. Keep their surroundings moist, damping between the pots twice or thrice daily, and spraying the foliage in hot, dry weather. Those that are not re-potted must be afforded liberal quantities of water, and at no period of the year allowed to become very dry. The best results are obtained by growing the plants in moderately cool conditions. Red spider may appear, but scale insects are the greatest pest of Cymbidiums. Infested plants should be cleansed thoroughly, and particularly the pseudo-bulbs. The dwarf-growing *C. Devonianum* and *C. tigrinum* are very distinct from those enumerated above, for they produce pendant racemes. For this reason they should be grown in Teakwood baskets or pans. Both species should be potted in a mixture of Osmunda-fibre and Sphagnum-moss.

THE KITCHEN GARDEN

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH,
Wroxton Abbey, Banbury, Oxfordshire.

INSECT PESTS.—The old-fashioned practice of dusting plants and their surroundings with soot after rain or on dewy mornings is a good one, and is especially effective in checking the Carrot fly. The whole of the Carrot beds, including the seedlings, should be dusted thoroughly with soot twice a week, and more frequently if storms are frequent. Paraffin is a useful specific, and may be applied as an emulsion at the rate of one wineglassful stirred into two gallons of boiling water, into which half a pound of soft-soap has been dissolved. The mixture should be sprayed thoroughly over the surface of the seedlings and the bed with a knapsack syringe or other sprayer. Another method is to thoroughly saturate powdered charcoal, sand, wood ash, or sawdust with the mixture and sprinkle it between the rows. Or saucers may be filled with paraffin and placed at intervals in the beds, as all insects dislike the smell of paraffin. The same treatment may also be used against the Onion fly. To check the Celery fly, dust the plants fre-



THE CHELSEA SHOW.

FIG. 118.—*ODONTOGLOSSUM ARDENTISSIMUM* MEMORIA J. GURNEY FOWLER
(R.H.S. Award of Merit. See p. 285.)

serymann's catalogue proclaims the variety as one for 'Exhibition.' In the above quotation it does not appear what, if any, steps were taken to select pollen for artificial pollination; be that as it may be, it is clear that one generation was not regarded sufficient, and that selection of individuals which showed "reversion" was carefully made. Anyhow, it would appear that the parentage of the introductions by Van Mons and his contemporaries must often have been extremely complex. Thomas Andrew Knight's addition (Treatise, 1815) to the Siberian Crab in the choice of parent sorts apparently was more to introduce the quality of hardiness directly,

interesting, no doubt, to many readers if some of those who have access to old magazines and records would contribute excerpts on the subject. H. E. Durham.

THE INTRODUCTION OF THE DAHLIA (see p. 247).—In Vol. II. of the *New Dictionary of Gardening* (1807) details will be found of the introduction at various times of seeds and the loss of the plants, with a detailed account of the plants raised from seeds sent by Lady Holland to Holland House in 1804. Perhaps the information given there is of the kind wished for by Mr. Harman Payne. R. P. B.

quently with soot or spray them with paraffin emulsion, which will coat the foliage with a thin but deterrent substance.

COLEWORTS.—This useful Cabbage may be sown as advised for other Brassicas in previous calendars. As the plants grow rapidly, and occupy only a small space, they may be planted in many positions, and may follow early crops, such as early Potatoes. Rosette and Hardy Green are two good varieties.

TOMATOS. Plants intended for fruiting out-of-doors may be transferred to their summer quarters. In gardens in the south success may be expected from Tomato plants in open positions during dry seasons. In colder districts the most sheltered positions available should be chosen. The soil should be well consolidated, and should not be too rich, or the plants will make growth at the expense of fruiting. Blank spaces on warm walls may be filled with Tomatos. They should be planted 18 inches apart, and if in rows the latter should be 3 feet asunder. Make provision for supporting the plants with stout stakes, which should be fastened to wires strained between posts. Little root watering is necessary after the plants are established, as a free use of water produces too much leafage.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES.

SUMMER BEDDING.—It is usually safe to plant the hardier subjects after this date, especially if they have been well hardened. As labour is scarce the work will naturally take longer than usual, and it may be necessary to take a little risk in starting early. The spring bedding may not yet be over, but where ground is available, or can be cleared, such subjects as Antirrhinums, Pentstemons, Violas, Marguerites, Calceolarias and East Lothian Stocks may be planted, following with others as far as possible according to their degree of hardiness, leaving the tender subjects, such as Heliotropes, until June.

POLYANTHUS.—Plants of Polyanthus which are removed from the beds to make room for the summer bedding should not be neglected. Large clumps may be divided (but not into very small pieces) and planted in semi-shade in lines made one foot apart. Water the roots copiously to settle the soil about them: this one application should be sufficient. Although mixed masses of these plants give a good display, it is much better to plant in separate colours. There need be no great nicety in getting the exact tints of colour together, it will be sufficient to separate them into groups of pale yellow, deep yellow, and so on. Spare plants which are not likely to be required for next year's spring bedding may be planted in odd parts of the garden where spring flowers would be appreciated.

SUPPORTING HERBACEOUS PLANTS.—Place stakes to plants that are growing freely and need support later, in the herbaceous border. The simplest method is to use Pea-sticks, preferably new ones, placing several sticks around each plant. The Pea-sticks may be trimmed off at the top according to the height of the flowers, allowing for the blooms to grow above the sticks. Though these supports may seem unsightly for a time they will quickly be covered with growth and hidden from view. The system is better, and entails less labour, than placing several stakes around each plant and enclosing the growth within string. It would be well to put all supports needed at the one time, and thus save treading on the border on more than one occasion.

APHIS ON ROSES.—As soon as green fly is noticed on Roses take measures to rid the plants of the pest: Quassia extract is generally effective, and there are many other insecticides that may be used.

SOME JUNE FLOWERS.—During June and the early part of July, the time between the spring and summer bedding, flowers are scarce in the garden, but full use should be made of *Dianthus barbatus* (Sweet William), *Cantebury Bells*, *Foxgloves*, *Nepeta Mussinii*, *Centranthus ruber*, *Cerastium tomentosum*, *Alyssum argenteum*, and *Achusa italica*.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcott, Eastwell Park, Kent.

STRAWBERRIES.—Healthy plants which have been only moderately forced may be planted in the fruit-garden, and as the ground is in excellent condition for planting, it should be done forthwith. Select soil which has been previously trenched and manured and has had time to settle firmly. The surface should be forked lightly, breaking the clods finely, and raking off the larger stones. Plant in rows made two feet apart, and set the plants about the same distance in the rows. Make the roots very firm in the ground. If doubt exists as to the presence of red spider on the plants, dip the leaves in an insecticide before turning the roots out of the pots. Disentangle the roots and reduce the ball of soil a little by means of a strong, pointed stick: if this be done the roots will grow quickly and become re-established before very hot weather sets in. Should the weather be hot and dry at the time of planting, soak the roots with water before and after planting. When planting is finished, rake the bed and afterwards stir the soil on frequent occasions with a hoe. Such varieties as *Royal Sovereign* and *Vicomtesse H. de Thury*, if planted and treated as described, invariably develop some good apikes of bloom in the autumn, and, if the season is favourable, ripen good fruit.

BLACK CURRANT.—Bushes free from big-bud are growing freely, and look very promising for good crops. Strong, vigorous plants are able to withstand attacks both of insect pests and fungous diseases much better than old, worn-out specimens, which should be discarded. The Black Currant produces the finest fruit on wood of the previous year, and should be encouraged to make plenty of healthy growth. If the bushes are affected with the mite causing "big bud" continue the treatment recommended on page 221, and follow this up by picking off and burning affected buds. Small bushes that were planted last season should not be permitted to carry much fruit, or it will be at the expense of growth. The better plan is to prune the shoots fairly hard, to cause strong growths to develop from the base that will produce good bunches the following season. Examine the bushes frequently for the presence of aphids, and take measures to destroy the pest as soon as it is detected, for when the foliage curls it is almost impossible to reach the insects by spraying.

RED AND WHITE CURRANT. Both the Red and White Currant, and, indeed, all small fruits, are liable to infestations of aphids, and the same measures should be adopted as in the case of the Black Currant. Stir the soil frequently with the hoe in dry weather, as this will have the double effect of destroying weeds and keeping the surface loose and friable. Bushes transplanted late last season require mulching and occasional waterings.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady Nunburnholme, Warter Priory, Yorkshire.

FIGS.—The first crop of fruit in the early house is ripe or approaching that stage, therefore use the syringe sparingly, and especially on dull days, when a free circulation of fresh air cannot be maintained. Do not entirely discontinue syringing, as the second crop of fruits is well advanced, and atmospheric moisture is needed for them to swell. With a little forethought and a sharp eye those in charge may overcome difficulties by careful ventilation and cautious syringings immediately after the ripe Figs have been gathered. Some plant houses are so light and well ventilated that the air dries quickly, favouring the spread of red spider, and it is in these that extra care is needed: trees in heavily-built, dark houses may require much drier treatment. Root waterings must be regular and plentiful, assisted by rich stimulants when the fruits are swelling. At that stage a fairly good temperature should be maintained, regulated by day and night ventilation.

SUCCESSIONAL HOUSES.—Trees started after the turn of the year have had longer days and better weather than the earlier ones, will benefit

by considerable warmth, with a proportionate amount of air and moisture, and especially in the day-time. It is not wise to force the trees unduly hard when they are in flower, but when blooming is over a minimum warmth of 70° will not be excessive. If the trees are trained on the long branch system, each shoot to be cut away when it reaches the extremity, let the growths have plenty of room. Syringe the trees twice on fine days, but only once in dull weather, for, much as the Fig likes moisture, the leaves should become dry before nightfall. Late trees in cool houses may be grown in a maximum temperature of 80° to 85°, obtained by closing the house early to make full use of sun-heat.

MELONS.—The earliest Melons are well netted, and will soon be ripening, when the use of the syringe should be discontinued. Maintain a brisk top and bottom heat, with a free circulation of air. Feed early plants which have had the fruits thinned to a suitable number with warm liquid manure, diluted to a suitable strength. Syringe freely when the house is closed in the afternoon. Melons in pots require copious waterings from the time the fruits are the size of hen's eggs until they cease swelling, when the amount of moisture should be reduced gradually.

SUCCESSIONAL MELONS.—Where Melons are grown in pots a second batch of plants should be ready for forcing by the time the last fruits of the earlier ones are cut. Melons being subject to attacks of red spider, every part of the house should be well cleansed after each batch. As the days lengthen and the sun gains power, the amount of fire-heat may be largely reduced, and, later, in fine weather, almost discontinued.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berkshire.

CALCEOLARIA.—A sowing of greenhouse Calceolarias may be made now, and another at the end of June or the beginning of July, the latter to provide a succession. The seed should be sown in pans of finely sifted soil, and watered carefully with a fine rose can. Stand the pans in a cold frame and keep the soil shaded until the seedlings appear. When large enough to handle, prick out the young plants into pans or boxes and keep them growing, gently, shading them from bright sunshine. Pot them on as their requirements demand. Their final shift should be into 7 in. pots. The plants require cool treatment always. Calceolarias are very subject to attacks of aphids, and should be fumigated occasionally with a nicotine compound.

EUPHORBIA (POINSETTIA) PULCHERRIMA.—Cuttings of Poinsettia may be inserted to raise plants for flowering in small pots. Much care is necessary in propagating this plant at this time of the year. If the old plants have been grown in a high temperature they should be placed in a cool house for a few days before taking the cuttings. Pot on rooted plants as soon as they are ready for a shift, and keep them growing in a warm, moist house. Some of the more promising of the old plants may be cut down, and, after carefully removing some of the soil, repotted into their flowering pots and grown on as advised above.

CARNATIONS.—Some of the earliest plants of *Souvenir de la Malmaison* varieties are developing their flowers. Shade the blooms from bright sunshine, or they will quickly lose their colour. It may be necessary to place the plants in a house by themselves for this purpose, as later plants must not be shaded unless it is desired to retard their flowering. Transfer to their final pots the earliest of the Perpetual-flowering varieties directly they are ready. A substantial compost must be prepared for this potting, which must be done firmly. Give the plants an abundance of fresh air as soon as they have recovered from the shift and expose them fully to the sunlight.

MIGNONETTE.—A sowing of Mignonette may be made to raise plants for flowering in the autumn. Sow the seeds in 3½ inch pots, or, to save labour, in their flowering pots. The plants may be grown in cold frames during the summer.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

APPOINTMENTS FOR JUNE.

THURSDAY, JUNE 1—
Linnean Soc. meet.
TUESDAY, JUNE 6—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
Scottish Hort. Assoc. meet.
WEDNESDAY, JUNE 7—
B.G.A. Executive meet.
MONDAY, JUNE 12—
United Hort. Ben. and Prov. Soc. Coms. meet.
WEDNESDAY, JUNE 14—
Sheffield Chrys. Soc. meet.
TUESDAY, JUNE 20—
Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
WEDNESDAY, JUNE 21—
Croydon Hort. Soc. Flower Show
THURSDAY, JUNE 22—
Horticultural Club visits Friar Park, Henley.
Roy. Jersey Hort. Soc. Rose Show.
TUESDAY, JUNE 27—
Roy. Agr. Soc.'s Show at Manchester (5 days). City of London Rose Soc. Show, Cannon Street Hotel.
WEDNESDAY, JUNE 28—
R.H.S.'s Red Cross Sale, Vincent Square, Westminster (2 days).
FRIDAY, JUNE 30—
Nat. Rose Soc. Show, Botanic Gardens, Regent's Park. New moon: 10h. 43m. morn.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 55.2°.

ACTUAL TEMPERATURE:—
Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, May 25 (10 a.m.): Bar. 29.1°; temp. 61.0°. Weather—Rain.

SALES FOR THE ENSUING WEEK

WEDNESDAY—
Hardy Bulbs, Herbaceous Plants, Palms, etc., at Protheroe and Morris' Rooms, 67 and 68, Cheapside, E.C., at 1. 45,000 Bedding Plants, at 12. Freehold Residence and 2 Houses and Land, at 2.30. Five Greenhouses, at 3.30, at the Nursery, 158, Ravenscroft Road, Beckenham, by Protheroe and Morris.
THURSDAY
8,000 Alpine Plants, at the Nurseries, Willow Grove, Chislehurst, by Protheroe and Morris, at 12.

Saving Daylight

The public has accepted the introduction of the Daylight Saving Act with a good sense and alacrity which must have been a little surprising to the apologists of that measure. Truth to tell, the great mass of the people was surprised that so common-sense a measure was not introduced long ago. They recognise that although the Government excused themselves for introducing it on the ground of war economy the measure justifies itself. After all, it is only introducing into temperate regions a practice which climatic conditions have long ago imposed on Europeans who live in the Tropics. In Ceylon everyone rises—or at all events used to rise—with the sun, and the working day begins at six o'clock. In Java the Dutch break the day by a long siesta, and whilst enjoying the comparative coolness of the early morning and late afternoon, seek refuge in sleep from the intolerable heat of a tropical midday.

To no class of the community will the daylight saving innovation be more acceptable than to the amateur gardeners and allotment holders. Those—and there are many—who actually cultivate their own gardens, have long ago practised the habit of early rising. Some austere spirits may resent this virtue being, as it were, imposed upon them; but the remedy lies in their own

hands, and they may still if they will get up an hour before the clock. Others of less stern stuff will cheerfully accept the new hours, and will be able to lie abed a little longer than was their wont, dozingly reminding themselves that they can make up in the long evening for the loss of time in the day. But it is the amateur gardener who is engaged in business or professional work during the day and who enjoys the help of a gardener, who will have unalloyed pleasure in the extended evenings. For him is another whole hour during which he may potter round the garden, pulling a weed here, picking off a caterpillar there, watching his Sweet Peas clambering to the sticks, and wondering vaguely why certain fruits, which promised so well, have fallen from the trees. It is to be hoped that he will be reasonable with his gardener, and will not ask him to stay at work later than heretofore, for otherwise his gain of sunlight will be his gardener's loss. In this respect Kew has set a good example, for in closing the gardens an hour before the usual clock time, although it may deprive visitors of some enjoyment, it will give the hard-worked staff a much needed relief. The parks are in different case. Many are flowerless, but even a mistaken zeal for economy cannot prevent the trees from giving shade nor the grass from growing green, and inasmuch as the number of attendants is relatively small, the public interest must in that case prevail over that of the employees.

Of the many objections that have been urged against this measure most appear frivolous to the layman. Astronomers do not seem to like it, nor do Lord Balfour of Burleigh's twins. The leading scientific paper was strongly against the change, but the arguments which it adduced did not appear to be very cogent. Suburban ladies are, it is said, very angry, and protest that it will mean paying calls in the heat of the early afternoon sun, and dining by natural instead of by artificial light. But of the futile arguments put forward by opponents to the measure the palm must be given to the person who claimed that our health will suffer because we shall be exposed to too much sunlight. It is a risk which we are prepared to take very cheerfully. It is true that, in the moist Tropics, exposure to sunlight may, and does at times, produce ill effects, but in our climate and with our cloudy skies it is certain that the change of the clock will prove not detrimental but beneficial to health.

Hence we welcome this little bit of common-sense legislation, and are glad that that very large section of the community that has a natural antipathy to early rising will not have an opportunity of practising this virtue without suffering from the inconveniences which we believe used to attend upon getting up early in the days when clocks were servile followers of the sun. At the same time, we must all be prepared for a rude shock on the day when we have to put back the clock, for we shall find ourselves returning home in gloomy darkness instead, as on the previous day, in soft twilight.

ROYAL VISITORS TO KEW.—QUEEN MARY, accompanied by PRINCESS MARY and PRINCE ALBERT, visited Kew Gardens on Wednesday of last week. No official notification had reached the Garden authorities, and the Royal party passed through the turnstile at the main gate with other visitors. On Friday, May 19, two days later, QUEEN ALEXANDRA was a visitor. The Gardens are now very beautiful: the Rhododendron Valley, the Azalea Garden, and the Bluebells in the woods are at their best.

PARIS SPRING SHOW.—Owing to difficulties in the erection of the temporary building in which the Paris Spring Show is usually held in the Cours-la-Reine, it has been decided that it shall take place in the society's hall, 84 Rue de Grenelle. The dates are fixed for June 3, 4, 5, 6, and not as previously announced. The profits of the show will be devoted to the victims of the war.

THE FAIRCHILD LECTURE.—The Worshipful Company of Gardeners will be present in state to hear the Fairchild lecture delivered by the Rev. Canon J. H. B. MASTERMAN, M.A., rector of St. Mary-le-Bow, on Wednesday, June 14, at 6 p.m., in Shoreditch Church. The Right Hon. the Lord Mayor (Colonel and Alderman Sir CHARLES WAKEFIELD), Renter Warden, will attend in semi-state, and will be accompanied by the Sheriffs, and there will also be present the Mayor and Corporation of Shoreditch.

ROYAL BOTANIC GARDENS.—We are informed by the Royal Botanic Society that the band of the Coldstream Guards will play in the Royal Botanic Gardens, Regent's Park, on Saturday and Sunday afternoons, during the season commencing June 3. Future arrangements include the National Rose Society's Show, the Theatrical Garden Party, and other events of botanical social, and charitable purposes.

R.H.S. "DAFFODIL YEAR BOOK."—The Council of the Royal Horticultural Society has decided to suspend the publication of the *Daffodil Year Book* for 1916. The reasons given are the increase in the expense of paper and printing, and of the labour difficulties attending it. Last year the sales of the work only amounted to one-ninth of its cost.

TRADE WITH CANADA.—We learn from the *Board of Trade Journal* that H.M. Trade Commissioner in Canada (Mr. C. HAMILTON WICKES) reports that a firm in Peterborough, Ontario, wishes to obtain agencies of United Kingdom manufacturers of wire nails, spades and shovels. This firm states that it has its own warehouse and can arrange to carry stocks. United Kingdom manufacturers of the goods mentioned, desirous of appointing an agent in Canada may obtain the name and address of the inquirer on application to the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall Street, London, E.C. In making application the reference number (166) should be quoted.

SCARCITY OF POTATOS IN GERMANY.—We referred (page 236) to the control made by the Germans of the areas planted with early Potatoes in Belgium, which was considered to be a preparatory measure to the confiscation of the crop. We now learn that German agents have been endeavouring to buy the whole crop of early Potatoes in Holland. The growers were summoned to a meeting, where they were asked to accept the German proposal, but unanimously they refused to do so. Great satisfaction is shown by the leading Dutch market gardeners, and *De Tuinbouw*, the official organ of the Netherlands Horticultural Council, congratulates the growers on the action they have taken. According to this paper, any other decision was inconceivable, and would have been a distinct breach of neutrality.

WAR ITEMS.—We learn that M. RAYMOND SOX, the son-in-law of M. JULES VACHEROT, the French landscape artist, who designs the plans of all the great Parisian horticultural exhibitions, has been mentioned in the Order of the Day.

ROYAL HORTICULTURAL SOCIETY

EXHIBITION AT CHELSEA.

May 23, 24 and 25.

It was only to be expected that this year's show at Chelsea would be smaller than those held previous to the war; but in spite of present circumstances, of shortage of labour and difficulty of railway transport, the exhibition was a great success, of which fact horticulturists have every reason to be proud. Orchids were present in fewer numbers than usual, owing chiefly to the absence of exhibits from Sir George Holford, K.C.V.O., and the late Treasurer, Mr. J. Gurney Fowler. Nevertheless, the display was contributed to by many exhibitors, and it will be seen below that a considerable number of novelties gained the Committee's award for high quality. Roses were splendid; Rhododendrons were magnificent; and Carnations, Sweet Peas, Irises, Tulips, Antirrhinums, Begonias, Clematises, Calceolarias, Gloxinias and Hippeastrums showed superior cultivation. Altogether, the exhibition was a notable demonstration of what may be accomplished in face of very difficult circumstances, and a complete answer to those self-constituted critics who ventured to call into question the decision of the society to accept a certain amount of risk rather than abandon this popular exhibition. Visitors remarked a great falling-off in the number of exhibits out of doors, and memories of recent years gave rise to inquiries for the rock-gardens which were lacking on this occasion. The weather was glorious, in striking contrast to the rain and mud of last year; and the attendance on the opening day was double that of 1915. The second day, Wednesday, was also gloriously fine, but when the gates were opened on the following morning, Thursday, rain was falling somewhat copiously. The Queen, accompanied by Princess Mary, was present early on Tuesday, and made an inspection of the exhibition, and Queen Alexandra and Princess Victoria visited the show on Wednesday.

The National Tulip Society opened its annual exhibition in the Chelsea grounds on the second day of the R.H.S. show.

Orchid Committee.

Present: Sir Harry J. Veitch (vice-chairman), Messrs. Jas. O'Brien (hon. secretary), R. A. Rolfe, F. J. Hanbury, Pantia Ralli, J. Cypher, J. E. Shill, T. Armstrong, H. G. Alexander, F. M. Ogilvie, W. Bolton, A. Dye, J. Wilson Potter, Stuart Low, W. Cobb, E. R. Ashton, Gurney Wilson, C. J. Lucas, R. G. Thwaites, A. McBean, S. W. Flory, W. H. Hatcher, W. H. White, R. Brooman-White, J. Charlesworth, C. Cookson and Sir Jeremiah Colman, Bart.

AWARDS.

FIRST-CLASS CERTIFICATE.

Odontoglossum ardentissimum Memoria J. Gurney Fowler (*O. crispum Solum* × *O. Pescatorei*), from Miss LOUISA FOWLER, Brackenhurst, Pembury. The most remarkable *Odontoglossum* in the show, and an interesting study from all points, the form an improvement on both parents, and perpetuating in a remarkable degree the irregular heavy blotching of *O. crispum Solum*. The large flowers had broad white sepals and petals; the sepals were tinged with rose, and bore, in some cases, one large maroon blotch, the petals being white with an occasional maroon blotch. The lip is mainly ruby-claret, the apiculate front pure white. It is one of the most beautiful and distinct of hybrid *Odontoglossums*.

Brasso-Laelio-Cattleya Joan var. *Verdun* (*B.-L. Mrs. Grotrix* × *C. Octave Doin*), from Messrs. CHARLESWORTH AND CO., Haywards Heath. A charming addition to its class, and a great advance on the original which Messrs. Charlesworth flowered in 1912. The flowers are of good shape and clear buttercup-yellow colour, the lip being crimped and slightly fringed at the margin.

AWARD OF MERIT.

Odontioda Brewii cupreum (*Oda. Charlesworthii* × *Odm. Harryanum*), from Messrs. CHARLESWORTH AND CO. The forms of this hybrid are usually of the darkest mahogany-red, with an occasional light form. The present variety is unique in colour, being of an orange-tinted copper tint unlike any other *Odontioda*.

Odontioda Florence (*Oda. Cooksoniae* × *Odm. Dora*), from Messrs. CHARLESWORTH AND CO. The plant, flowering for the first time, bore a finely branched inflorescence of 34 flowers, white tinged with rose at the margin and densely spotted with red-purple.

Miltonia Frank Reader (*Memoria G. D. Owen* × ?), from Messrs. ARMSTRONG AND BROWN, Orchidhurst, Tunbridge Wells. An improvement on the batch shown last year, which included the fine variety J. Gurney Fowler. The variety Frank Reader, which is the largest of the section, has finely-formed flowers of a bright rose-pink with a delicate veining of a darker hue, the base of the lip bearing a large, ruby-tinged mask with a central line in front. The margins of the segments fade to white on the petals and upper sepal.

Laelio-Cattleya Sir Merwyn Duller (*L.-C. Mrs. Temple* × *C. Mossiae*), from Messrs. ARMSTRONG AND BROWN. A fine flower, equal to a good *Cattleya Hardyana*, of a deep shade of rose with a fine dark crimson lip having gold lines from the base.

Cattleya Naidia, var. *luminosa* (*iridescens* × *Hardyana*), from Messrs. FLORY AND BLACK, Slough, Bucks. A neat flower of fine substance, with sepals and petals of bronzy-orange, the petals having a slight rose tint. Lip violet-crimson, with a bright orange-coloured disc.

Odontoglossum crispum Aldworthii, from Messrs. J. AND A. McBEAN, Cooksbridge. The excellent plant, which was only beginning to open the flowers on the spike, showed on the fully expanded one very bright colour and good form. The segments were dark ruby-red with an irregular, bluish-white margin, the petals being fringed. A grand *Odontoglossum*. (Also Davidson Cup.)

ORCHID GROUPS.

Sir JEREMIAH COLMAN, Bart., Gatton Park (gr. Mr. Collier), was the only exhibitor of an extensive group, and well did he sustain the amateurs' representation, now depleted by the grand pre-war exhibits of Lt.-Col. Sir G. L. Holford, and the more recent displays of the late Mr. J. Gurney Fowler. The feature of the group was the decided scarlet and white of the *Odontiodas* and *Odontoglossums*, many of which were raised at Gatton Park, the *Odontoglossums* being specially beautiful and varied. Among the best of those noted were *O. Queen of Gatton*, one of the most perfect of hybrids with yellow ground colour, and *O. crispum Pride of Gatton*, a bright flower with large maroon blotches in the segments. Among one brilliant display of Gatton *Odontiodas*, *Oda. Colmaniae*, of the class of *Oda. Lady Colman*, a grand yellow flower heavily blotched with deep red (F. C. C., 1915); *Odm. Maid of Gatton*, white, most beautifully blotched; *O. Pescatorei virginalis*, with a grand spike of pure-white flowers, and a fine selection of *Cattleyas*, including a pretty bluish-white *C. Mendelii*, were excellent. The Gatton exhibits always give a remarkable selection of rare species, and the present group was in that direction highly interesting. The Amateurs' Gold Medal was awarded.

The groups, restricted to 200 feet, were arranged on each side of the large tent No. 3, the end on one side being commenced by Messrs. ARMSTRONG AND BROWN, Tunbridge Wells, who secured the Gold Medal, the highest award in the trade section. This group had the fewest plants, the greatest proportion of new and rare things, and the best staging effect,

each fine novelty standing by itself with a raised background of good specimens. *Odontoglossum crispum Lusitana* was a grand flower of perfect shape and fine marking, and some of the new hybrid *Odontoglossums*, yet undeveloped, promised even better things. *Odontiodas* were in rich variety, and always pretty and attractive. *Odontioda Anzac*, an *Oda. Vnylstekeae* cross; *Oda. Connie* (*Oda. Cooksoniae* × *Odm. Armstrongiae*), and *Oda. Ashtoniae* (*C. Noezliana* × *Odm. Fascinator*) being specially good. The lick was of showy *Odontoglossums*, *Odontiodas*, and *Cattleyas*, and in the centre the new *Miltonia* Frank Reader. The *Orchidhurst* seedling *Odontoglossums* were well represented, and also the novelties of recent years, especially the *Odontoglossum crispum* and *O. Aglaia* *Orchidhurst* variety. *Brasso-Cattleya Shilliana* and other *Brasso-Cattleyas* and *Laelio-Cattleyas*.

MESSRS. SANDER AND SONS, St. Albans, followed with a fine group, in the middle of which was a striking selection of hybrid *Miltonias*, the specimen of *M. Charlesworthii* in the centre and the new *M. Hyeana Sunrise* being of the best of their class. The middle of the group was of *Laelio-Cattleya Fascinator*, with hybrid *Miltonias* in front, the ends being marked by the dark mauve-purple St. Albans type of *Laelio-Cattleya Hyeana* with white and blotched *Odontoglossums* and scarlet *Odontiodas*. *Odontoglossum crispum Harryanum* General Joffre was a grand hybrid with 19 beautifully blotched flowers on the spike. Of the large display of white and coloured *Cattleyas* *C. Mossiae* *Reineckiana* *Princess Olga* of Russia was the most beautiful white-petaled form. *Miltonia vexillaria* *scutellaria* and *M. Hyeana Sunrise* represented grand forms of the species and hybrids respectively; *Dendrobium Sanderiae* showed one of the best rare white *Dendrobes*, and throughout the group were many interesting species. (Silver-gilt Flora Medal.)

MESSRS. J. AND A. McBEAN, Cooksbridge, had a showy group, which had in their new *Odontoglossum crispum Aldworthii* (see Awards) the honour of containing the variety which took the Davidson Cup. The group throughout was well staged, with *Cymbidiums* and yellow and brown *Oncidium McBeanianum* at the back and batches of bright *Odontiodas* and *Odontoglossums*, with *Cattleyas* and *Laelio-Cattleyas* on each side. *Odontioda Vnylstekeae* McBean's variety was one of the best scarlets; the Cooksbridge forms of *Odontoglossum eximium* were very fine; a good spotted *O. Pescatorei* and some new hybrids very attractive; the forms of *Cattleya Mendelii* and *C. Mossiae*, for which the firm are noted, were profusely flowered, and the *O. crispum* superbly grown and various in colour. (Williams Memorial Medal.)

MESSRS. CHARLESWORTH AND CO., Haywards Heath, completed the end on that side of the tent with a beautiful group containing a superb selection of *Laelio-Cattleya Fascinator* in the centre, with *Xanthotes* forms of *O. crispum*, *O. ardentissimum* and *O. eximium* sending up their chaste spikes of white flowers among them. Groups of the *Lyoth* hybrid *Miltonias*, including *M. Charlesworthii* in many forms, always beautiful, *M. Hyeana* and *M. vexillaria* *Lyoth*, *Odontoglossums* and *Odontiodas*, always well shown by Messrs. Charlesworth, have seldom been seen so well displayed. Some of the best are described under "Awards." Others noted included a superb form of *Odontioda Red Cross*, a pretty batch of *Oncidium pulchellum*, a charming form of *Laelio-Cattleya Fascinator* *Mossiae*, and a selection of hybrid *Odontoglossums*, and home-raised *O. crispum*. (Williams Memorial Medal.)

An exhibit in the centre of the tent, which was viewed by orchidists from all parts of the country with sorrow, and with admiration for the beauty of the plants, was a selection of choice specimens from the collection

of the late J. GURNEY FOWLER, Esq., Brackenhurst, Pembury, including the charming *Odontoglossum crispum* Solum, the famous *O. Princess Mary* which had previously secured a First-class Certificate; *O. illustre* Europa, with violet flowers, similarly famous; and the very handsome *Laelio-Cattleya* J. F. Birkbeck.

On the same stand W. P. BUCKINSHAW, Esq., Hesse, near Hull, showed a good white form of *Cattleya Mendelii* with a pink flush on the lip.

At the other side of the tent Messrs. MANSELL AND HATCHER, Rawdon, Leeds, staged a beautiful group of pretty Orchids, the middle being of handsome *Miltonias* and the ends of very fine *Odontoglossums* with the slender sprays of the purple and rose hybrids of *Odontoglossum Edwardii* overhanging. *Odontiodas* were well represented, *Oda*, *Orion* (*Jasper* × *Charlesworthii*) (*Odm. Jasper* × *Oda*), being especially attractive. *Cattleyas* and *Laelio-Cattleyas* were well displayed with some new *Odontoglossums* and *Odontiodas*, *Coelogyne pandurata*, the green *Lycaste Locusta Mooreana* and other rare species. (Silver-gilt Banksian Medal.)

Messrs. J. CYPHER AND SONS, Cheltenham, had one of the most artistically arranged groups of the show, in which their special culture of *Dendrobiums*, *Oncidium Marshallianum*, showy *Masdevallias*, *Laelia purpurata*, *Odontoglossums* and *Miltonias* were well displayed. The central specimens of fine *Laelio-Cattleya* Baden-Powell and *L. purpurata*, with *Dendrobium Wardianum* fringed by the green and white *Cypripedium Maudiae* were very striking, and the brilliant scarlet and mauve of the *Masdevallias* and rose-purple of *Laelio-Cattleya Hyeana splendens* showed up well. Excellent forms of *Cattleya Mossiae* and *C. Mendelii* and a number of pure white forms were also noted. (Silver-gilt Banksian Medal.)

Messrs. FLORY AND BLACK, Slough, had a very pretty group, chiefly of the hybrids taken over by them from the late collection of Messrs. Jas. Veitch and Sons, the *Laelio-Cattleyas*, *Cattleyas*, etc., in which are now showing their good quality, and the earlier of the crosses of Messrs. Flory and Black beginning to turn in. The best shown was *Cattleya Naudia* (see Awards) and *Laelio-Cattleya Gladiator* var. *Goliath*, a very large and showy flower; the white *Cattleya Mendelii* *Imogene*, and the richly coloured *Odontoglossum promerens* var. *Lilian*. (Silver Flora Medal.)

Mr. HARRY DIXON, Wandsworth Common, London, S.W., staged an effective group of *Odontoglossums* and *Odontiodas*, with arching sprays of *Odontoglossum Edwardii* hybrids and *Oncidiums*, with *Cattleya Mendelii*, *C. Mossiae*, good *Odontoglossums*, including a fine form of *O. Ceres*, and *Dendrobiums*. (Silver Flora Medal.)

Mr. C. F. WATERS, Balcombe, staged a good group of *Miltonia vexillaria*, pretty yellow *Dendrobiums*, *Cattleya Mossiae*, *C. Mendelii* and *Cypripediums*. (Silver Banksian Medal.)

Messrs. STUART LOW AND CO., Jarvisbrooke, Sussex, showed a very praiseworthy group, good both in effect and quality. At one end was a batch of white *Phalaenopsis Rimstadiana* and red *Remantthera linschottiana*, and at the other yellow *Oncidium Marshallianum*, with pretty *Odontoglossums*, scarlet *Odontiodas*, and showy *Laelio-Cattleyas* filling in the intervening spaces. Rare things were the singular *Cattleya intermedia* *Aquinii*, with petals coloured like the lip; *Cattleya Warscewiczii* Royal Sussex, a very large, light form; *C. Mossiae grandis* and *Brassia-Laelio-Cattleya Truncata* *Memoria Sir Trevor Lawrence*, the best of this pretty hybrid which has yet appeared. (Silver-gilt Flora Medal.)

Mrs. NORMAN C. COOKSON, Oakwood, Wylm (gr. Mr. H. J. Chapman), sent a grand plant of the richly blotched *O. crispum* *Millicent*.

C. WEIR, Esq., Codsall (gr. Mr. White), sent a well-flowered *Bifrenaria Harrisoniae*.

Floral Committee.

Present: Messrs. H. B. May (chairman), W. P. Thomson, E. H. Jenkins, A. Turner, W. B. Cranfield, John Dickson, R. Hooper Pearson, A. G. Jackman, J. Jennings, G. Reuther, J. F. McLeot, R. W. Wallace, J. Green, C. E. Pearson, T. W. Barr, W. J. Bean, C. Dixon, W. Howe, G. Paul, W. Crump, J. Hudson, J. W.

Moorman, T. Stevenson, H. J. Jones, A. Watkins, and W. H. Morter.

AWARDS OF MERIT.

Papaver orientale King George.—A variety of richest scarlet, with lacinated petals that have black blotches at the base. Exhibited by Mr. AMOS PERRY.

Paeony Ceres. Apparently a hybrid between *P. peregrina* and *P. officinalis lobata*. The

are ovate-linear, notched at the edges and about 4.6 inches long. The scapes are 12-15 inches high, farinose, and in the majority of the plants exhibited by Messrs. BEES, fasciated, although numerous plants shown by Mr. ALLGROVE, raised from seed collected by Mr. Purdon, had normal stems. The flowers are in verticillate whorls of about 12, and there are sometimes as many as three tiers. The petals are coloured rose-pink.

Androsace coccinea. This species was shown as *A. Bulleyana*, but it has been recognised as *A. coccinea* of Franchet. The foliage makes a tight rosette, 3 inches or more in diameter, and from it arises a main central inflorescence and weaker side ones—about five in all. The flowers are borne in a capitate umbel of about two dozen, the rich scarlet blooms being each about ½-inch across. The plant is a biennial. These two were shown by Messrs. BEES, LTD.

Clematis Crimson King.—A large-flowered variety of the *Jackmanii* type with vinous-red petals that are nearer crimson in the opening bud. The colour is a distinct shade in these large-flowered lanuginosa varieties, and the plant, grown as a pillar specimen, was a most beautiful object. Shown by Messrs. G. JACKMAN AND SON.

Sedum humifusum. A small, tufted plant, the growth of rosette-leaves being not more than ½-inch long, but capable of growing 12 inches in certain conditions, and bearing bright yellow star-like flowers. It is a gem for the moraine. Shown by Mr. REGINALD PRICHARD.

Carnation Sweet Anne Page.—A border variety with canary-yellow ground and heavily striped with mauve-purple. The shade comes near to puce, but it is attractive, and will be sure to meet with appreciation at the hands of decorators. The bloom is of large size, excellent in form, of great substance of petal, and has a stout, non-bursting calyx. Shown by Mr. JAMES DOUGLAS.

Iris bracteata (see fig. 122).—A Californian species of the beardless section, with long, broad, strap-shaped leaves, and inflorescence about 6-8 inches high, bearing two and sometimes more flowers of a deep straw-yellow ground, beautifully veined with purple. The falls are very large and are disposed horizontally.

Primula heliodora (see fig. 124).—A new Chinese species of the candelabra section discovered by Mr. G. Forrest in Western China. The whorled spikes are 2½ feet high from the pot, with as many as seven or eight tiers of soft, yellow blooms, that bear a striking resemblance in size and colour to those of *Jasminum primulinum*. It is one of the most distinct species of this wide genus. The plants have, so far, proved hardy, and they have a robust constitution. These two species were shown by Messrs. R. WALLACE AND CO.

Lilac President Fallières.—A large, double-flowered variety, with soft lilac-coloured blooms. Shown by Mr. R. C. NOTCUTT.

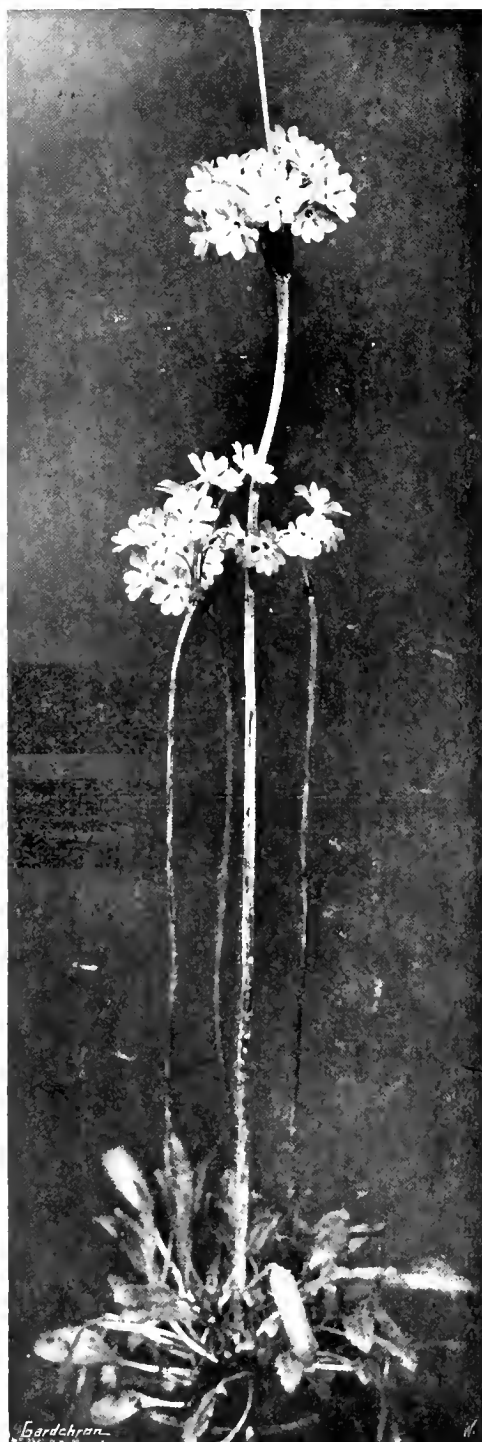
Lilac Beaumar.—A dense, shouldered truss of dark carmine-coloured blooms, the individual flowers measuring more than ½ inch across. Shown by Mr. CHAS. TURNER.

Spiraea Princess Mary.—A pink-flowered variety, of deeper shade than the older sorts of this type. Shown by Messrs. T. ROCHFORD AND SONS.

Sweet Pea Dora.—This variety obtained an award at the National Sweet Pea Society's trials last year. It is a very decorative flower, the standard being pale salmon-pink, suffused with faint rose, and the wings bluish colour. Shown by Messrs. DORRIF AND CO.

Rose Molly Bligh.—A Hybrid Tea variety of glowing pink colour, with a golden suffusion at the base, that throws a sheen in the interior of the bloom. The flower is of excellent form, both in the bud and mature stages, and sweetly fragrant. Shown by Messrs. ALEX. DICKSON AND SONS, LTD.

Rhododendron Bayshot Beauty.—A very compact, free-flowering variety of a vivid cerise shade with a few black spots in the upper petal. The truss is well built and of large size, most of the plants having the foliage entirely hidden by the blossoms. One specimen as a standard was magnificent. The variety is free in growth and flowering. Shown by Messrs. WATERER, SONS AND CRISP, LTD.



THE CHELSEA SHOW.

FIG. 119.—PRIMULA CONSPERSA: FLOWERS ROSE-PINK.

(See awards by the Floral Committee.)

foliage resembles *lobata*, and is nearly glabrous; the leaf is small and deeply lobed. The flowers are goblet-shaped, about 5 inches across, coloured a full shade of salmon-rose (some said coral-scarlet), and set off by a ring of golden anthers on red filaments. Shown by Messrs. BARR AND SONS.

Primula conspersa (see fig. 119).—A species collected by Mr. Reginald Farrer in China. It is of the *farinosa* section; the leaves

STOVE AND GREENHOUSE PLANTS.

Messrs. SUTTON AND SONS, Reading, occupied the end of the largest tent with a display of flowering plants set off by Palms, Acer Negundo and Eulalia. The scheme was five half-circular mounds, connected with groups of *Schizanthus retusus*, *Nicotiana* hybrids, and *Calceolaria* Fairy hybrids, with a broad band of *Primula obconica* in four shades, magnificent *Gloxinias*, and *Streptocarpus* in front, the group edged with *Nemesias* and *Mignonette*. The centre-piece was a bank of *Star Cinerarias* in pink, blue and white, some of the last having blue, others mauve, and still others yellow centres. One of the most gorgeous of the groups was composed of greenhouse *Calceolarias*, the plants being superbly flowered; a companion bank of *Schizanthus* was equally beautiful; these groups were repeated at the other end. The whole gave a magnificent effect, forming an assemblage of delightful colours. (Gold Medal.)

Messrs. JAMES CARTER AND CO., Raynes Park, were allotted the opposite end of the tent to Messrs. Sutton. Their design was very effective, and gave scope for the employment of a variety of beautiful flowers. A series of beds enclosed by a narrow grass verge contained magnificent tuberous-rooted *Begonias*, large-flowered *Calceolarias*, *Schizanthuses*, *Petunia* Queen of Roses, P. White Pearl and P. Crimson King. In some cases white Stocks were used as an edging, and they were repeated in crimson varieties, linked up by a row of *Adiantum* Ferns. At the back were mounds of gorgeous *Cinerarias* and large pyramidal plants of *Clarkia* Brilliant Princess, a pink variety, dwarfier *Cinerarias* of the Brilliant Prize strain separating these from the flowers massed in the beds. Here and there a clump of the rich yellow *Calceolaria Chibrani* served to enhance the effect, and a free use of Palms and Ferns supplied the necessary greenery. (Gold Medal.)

Messrs. EDWARD WEBB AND SONS, Stourbridge, had an enclosed garden with narrow grass verge and beds of *Petunias*, *Schizanthus*, *Begonias* of exceptional quality, *Primula obconica* in rose and lavender shades, and Stocks, set in the soft greenery of *Adiantum* Ferns. But the best features were large half-circular mounds of *Schizanthus*, *Cinerarias* and greenhouse *Calceolarias* that formed huge banks of the most delightful colours. A duplicate exhibit, broken by the tent entrance, contained *Hippeastrums*, *Star Cinerarias*, *Calceolarias*, and *Schizanthus* of equally fine quality. (Silver-gilt Flora Medal.)

The only collection of miscellaneous stove plants was that from Mr. L. R. RUSSELL, Richmond, and this was not of the size he usually exhibits, though each plant was perfectly grown. Perhaps the outstanding feature was the handsome plant of *Ananassa sativa* variegata, which had three very showy fruits surmounting the beautiful leaves. *Dracaena* Victoria and various *Caladiums*, and *Nertera depressa* were all splendid. (Silver Flora Medal.)

Messrs. R. P. KER AND SON, Liverpool, showed a collection of *Hippeastrums* which survived the long and trying journey exceedingly well. Whilst the flowers were of large size, the colours were refined, illustrating the highest possibilities of this noble flower. Of the many sorts the very best were *alba marginata*, Sultan, The Chancellor, Ruby Queen, and Midas, and besides these there were many desirable unnamed seedlings. (Silver-gilt Flora Medal.)

Mr. ALFRED DAWKINS, Chelsea, showed a very dwarf and compact strain of *Schizanthus* hybrids. The plants, which were growing in 5-inch pots, were exceedingly floriferous, and showed a wide range of colours. (Silver Flora Medal.)

Messrs. JOHN PEED AND SON, West Norwood, were responsible for a charming exhibit of *Caladiums*, all of exhibition size, and bearing large, delicate leaves. Of the pale, almost transparent leaved sorts, Mary Archer, Leonard Bause and Silver Queen were especially fascinating, and many wondered that with so little green they could be so healthy. Amongst the brighter varieties, Nai Lek, The Mikado, Alexander III, and Triomphe de Comte were equally well grown. (Silver-gilt Flora Medal.)

In No. 1 tent Messrs. JOHN PEED AND SON, West Norwood, filled the end staging with first-rate strains of *Gloxinias* and *Streptocarpus*. Of

the former, King George, free-flowering, rich crimson, and Lady Warwick, clear rose, were especially decorative. (Silver Banksian Medal.)

Mr. A. P. BRUCE, Chorlton-cum-Hardy, Manchester, had a most fascinating group of *Sarracenia* and allied plants, which, arranged with great taste and skill, was a cool and pleasant feature of the show. The Sundews were particularly well grown; there were fine plants of *Drosera binata* and *D. capensis*. Of the *Sarracenia*s the varieties *magnifica*, *ornata* and *gigantea*, all showing the colour delicacy of the species, were particularly attractive. *S. Patersonii*, of deep colour,

hardy nature, we noted perfect specimens of *Lep-tospermum Nicholsii*, the *Gardeners' Chronicle* "New Plant" of the International Show of 1912. (Silver-gilt Banksian Medal.)

Very vigorous plants of *Hippeastrum*, bearing large spikes of splendid flowers, were massed on the ground by R. L. MOXD, Esq., Sevenoaks (gr. Mr. Hall). None of the varieties was named, but all displayed first-rate cultivation. (Silver-gilt Banksian Medal.)

Messrs. BLACKMORE AND LANGDON associated superb double-flowered tuberous *Begonias* with their *Delphiniums*. The rich crimson and red-



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FIG. 120.—H.T. ROSE MOLLY BLIGH.

(See awards by the Floral Committee, p. 289.)

and *S. Farnhamii* were also very meritorious. (Silver-gilt Banksian Medal.)

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, featured magnificent *Gloxinias* and *Streptocarpus*. The former were all erect-flowered, very floriferous and of unusually large size. The rich green foliage and stout, straight flower stalks all indicated that Messrs. STUART LOW AND CO. possess an excellent strain, several of the individual flowers measuring five inches across. Amongst the uncommon shrubs of half

coloured varieties were the most popular with the visitors—such sorts as Royal George, Lord Methuen, General Joffre, James Baird and W. H. Bourne were characterised by large perfectly-formed blooms. (Silver-gilt Banksian Medal.)

Messrs. WHITELEGG AND PAGE, Chislehurst, demonstrated in their exhibit how well *Schizanthus Wisetonensis* may be grown in 5 and 6 inch flower-pots, and also that they possess an excellent strain of this valuable spring flowering greenhouse plant.

Messrs. T. S. WARE, LTD., Feltham, showed a beautiful collection of double-flowered tuberous Begonias grouped on the staging where their charm and value could be freely seen. The plants were sturdy and compact, and the blooms were all borne on stout, erect stalks. Of the collection we selected King George (orange-salmon), Mrs. Canfield, and Iris Stroker (clear rose), and Lady Arthur Nicholson (deep orange), as being especially desirable. (Silver-gilt Flora Medal.)

Messrs. H. B. MAY AND SONS, Upper Edmonton, associated Hydrangeas bearing large trusses of white, blue, or the normal pink flowers, with standard plants of Pelargoniums, Heliotropes, and Marguerites.

ROSES.

The most gorgeous individual exhibit of Roses was the large group of Paul's Scarlet Climber by Messrs. W. PAUL AND SON, Waltham Cross, Herts. This recent novelty was shown in splen-

did form; the many tall pillars bore ample bunches of vividly coloured flowers. Not only does Scarlet Climber flower freely, but the individual flowers are of good size, and the plants push up stout shoots from the base. Near by Messrs. Paul had a magnificent collection of miscellaneous Roses, and of these it was difficult to choose between the superb Wichuraiana pillars, weeping specimens and dwarf pot Roses. Of the former, American Pillar was splendid, and well supported by very floriferous examples of Excelsa, Ethel and Lady Godiva. Standard plants of such sorts as Lyon Rose, Le Progrès, Commandant Félix Faure and Madame Ravary all showed the same high cultural skill, and the many dwarf plants bore ample quantities of first-rate blooms. Of these mention may be made of Marella, Autome Rivoire, Lient, Chaure, Augustus Hartmann, Lady Hillingdon, Jonkheer, J. L. Mock and Jeanne Noté. (Gold Medal.)

Messrs. WM. CUTBUSH AND SON, Highgate, ex-

hibited mounds of such Polyantha varieties as Jessie, Orleans and Ellen Poulsen placed at the corners and surmounted by beautiful, pillar-trained Wichuraianas. (Silver-gilt Flora Medal.) The place of honour was given by Messrs. HOBBIES, LTD., Dereham, to a superb pillar of Excelsa smothered with brilliant blooms. Other specimens of Dorothy Perkins and Tausendschon was also very beautiful, and the many Polyanthas which formed the groundwork were exceedingly well grown. These included Ellen Poulsen, Jessie, Annie Muller and Mrs. Taft. (Silver-gilt Flora Medal.)

Prominent in the group set up by Messrs. J. PIPER AND SON, Bayswater, were two batches of the Chinese Rosa Hugonis, one of the earliest Roses to flower in the open. The medium-sized single, yellow flowers are borne in the greatest profusion, and as it is a perfectly hardy species the plant should have a great future as a pergola and wall Rose. (Silver Flora Medal.)

Mr. GEO. PRINCE, Oxford, relied solely on

varieties, Benlah (a loosely-formed pink flower of great garden value) and Rosabel Walker (very dark and fragrant) were included amongst the front row of fine Roses. (Silver-gilt Flora Medal.)

Messrs. G. AND W. H. BURCH, Peterborough, in front of a generous background of Wichuraiana varieties, displayed excellent blooms of J. B. Clark, Florence Pemberton, Jonkheer, J. L. Mock, Mabel Drew, Mrs. T. Roosevelt and many other exhibition varieties in splendid condition. (Silver-gilt Flora Medal.)

Messrs. B. R. CANT AND SONS, Colchester, also utilised their allotted staging to good effect. The central feature, of Silver Moon, was very successful; it is a large single white flower. In the foreground were many superb blooms of H.T. varieties set out in exhibition boards. (Silver-gilt Flora Medal.)

In a group arranged on the ground by Mr. C. TURNER, Slough, standards of J. B. Clark, Madame Jules Gravereaux and Snow Queen were



THE CHELSEA SHOW.

FIG. 121 —MESSRS. SUTTON AND SONS' EXHIBIT OF VEGETABLES.

(See p. 292.)

did form; the many tall pillars bore ample bunches of vividly coloured flowers. Not only does Scarlet Climber flower freely, but the individual flowers are of good size, and the plants push up stout shoots from the base. Near by Messrs. Paul had a magnificent collection of miscellaneous Roses, and of these it was difficult to choose between the superb Wichuraiana pillars, weeping specimens and dwarf pot Roses. Of the former, American Pillar was splendid, and well supported by very floriferous examples of Excelsa, Ethel and Lady Godiva. Standard plants of such sorts as Lyon Rose, Le Progrès, Commandant Félix Faure and Madame Ravary all showed the same high cultural skill, and the many dwarf plants bore ample quantities of first-rate blooms. Of these mention may be made of Marella, Autome Rivoire, Lient, Chaure, Augustus Hartmann, Lady Hillingdon, Jonkheer, J. L. Mock and Jeanne Noté. (Gold Medal.)

cluster varieties, and had a very pleasant arrangement. A standard of Jessie showed that this variety, which is usually grown as a low bush, is equally adapted for training as a standard of medium height. Coronation, Blush Rambler and Excelsa were also very beautiful, while Austrian Yellow supplied glorious colour. (Silver Flora Medal.)

Messrs. R. J. BARNES AND SONS, Malvern, displayed such varieties as Mrs. A. Ward, Sunburst and American Pillar. (Silver Flora Medal.)

Messrs. ALEX. DICKSON AND SONS, Newtownards, showed Janet, a new H.T. Rose of biscuit-fawn colour, suffused with silky salmon. Mrs. Wemyss Quin, Mrs. S. T. Wright, Mrs. Bryce Allen, Mrs. Cornwallis West, and many other sorts were on show. (Silver Flora Medal.)

A very bright and graceful arrangement was made by Messrs. FRANK CANT AND CO., Colchester, who set up many beautiful cluster varieties and four of dwarf sorts. Two new H.T.

very prominent and of great merit. (Silver-gilt Flora Medal.)

Messrs. STUART LOW AND CO., Bush Hill Park, Enfield, showed a few varieties, including Constance, Richmond, Mrs. J. Laing and others in generous numbers. (Silver Banksian Medal.)

The Rev. J. H. PEMBERTON, Havering-atte-Bower, showed interesting seedlings. (Silver Banksian Medal.)

Messrs. T. ROCHEFORD AND SONS, Broxbourne, gave the central place to a splendid mass of climbing Mrs. F. W. Flight, a new white variety, and also showed exceedingly good plants of Jessie and Ellen Poulsen which were characterised by brilliant colouring. (Silver-gilt Banksian Medal.)

Messrs. PAUL AND SON, Cheshunt, had many good plants of Wichuraiana and H.T. varieties massed in a group on the ground, and of the latter section Candeur Lyonnaise, Magnolia, Caroline Testout, Naarden and Lemon

Pillar were especially noteworthy. (Silver-gilt Banksian Medal.)

On a staging Mr. E. J. HICKS, Twyford, made a bright and valuable display, featuring the rich crimson single, Princess Mary. Stands of C. E. Shea, Mrs. J. Laing and Richmond were also of much more than average merit. (Silver-gilt Banksian Medal.)

Messrs. H. CANNELL AND SONS, Eynsford, Kent, associated many of the popular Wichuraiana varieties with Pelargoniums and other decorative plants. Such Roses as Excelsa, Dorothy Perkins, Minnehaha and Lady Godiva were exceedingly floriferous. (Bronze Flora Medal.)

CARNATIONS.

Mr. A. F. DUTTON, Iver, Buckinghamshire, showed Carnations of the Perpetual-flowering type. The blooms were of extraordinarily fine quality, and they were arranged in huge sheaves in decorative baskets and pots in a most pleasing style. Outstanding varieties were Mary Allwood, White Wonder, Lady Fuller, pink; Triumph Beacon, Mrs. C. W. Ward and Baroness de Brien. (Gold Medal.)

Messrs. W. WELLS AND CO., LTD., Merstham, showed superb blooms of White Wonder, Pink Sensation, Lord Kitchener, pink; Aviator, scarlet, and others. (Silver-gilt Banksian Medal.)

Mr. JAMES DOUGLAS, Great Bookham, exhibited border varieties of such beautiful sorts as Innocence, bluish salmon; Mr. R. Gordon, pink; Bookham White, Bookham Clove, Elizabeth Huffner, apricot; Mrs. A. Brotherston, a "fancy" variety, white ground, heavily spotted with purple; Cecilia, yellow; and Deloraine, scarlet. (Silver-gilt Flora Medal.)

Messrs. ALLWOOD BROS., Wivelsfield, contributed an imposing exhibit of fine flowers, the back consisting of large groups of Mary Allwood and Wivelsfield White. Over these hung baskets decorated with May Day, the effect being good. Such novelties as Bedford Belle, Nora West, Bishton Wonder and Rosalind were also shown well in smaller vases. (Silver-gilt Flora Medal.)

Messrs. STUART LOW AND CO., Enfield, exhibited Perpetual-flowering Carnations, in an exhibit that showed much skill in arrangement. The beautiful Princess of Wales "Malmaison" variety was exhibited in company with the deeper-toned Mrs. Myles Kennedy, of which pot plants were also shown. (Silver-gilt Banksian Medal.)

Misses PRICE AND FYFE, Birch Grove, Sussex, showed their novelties Kenneth, mauve suffused with rose, and Malcolm, cherry-red, in a small collection. (Bronze Flora Medal.)

Messrs. W. CUTEUSH AND SON, Highgate, arranged an exhibit of Carnations in a circle, with graceful Cocus Palms as foils and a ground of Adiantum Ferns. (Silver Flora Medal.)

Mr. H. BURNETT, Guernsey, was awarded a Silver Flora Medal for a collection.

PELARGONIUMS.

A very large floor group of scented-leaved Pelargoniums, from the Hon. VICARY GIBBS, Aldenham House, Elstree (gr. Mr. E. Beckett), represented this attractive and interesting section at its best. Floriferous standards of Shrubland Pet, Prince of Orange, Purple Unique, Scarlet Unique and other sorts made a pleasant variation. Of very un-Geranium-like appearance were such species as tetragonum, betulinum and glaucum, which illustrated the great diversity of the genus Pelargonium. (Silver-gilt Flora Medal.)

Messrs. JARMAN AND CO., Chard, associated vases of bright and large-trussed Zonal Pelargoniums with Viola gracilis and other border flowers. Mr. VINCENT SLADE, Taunton, also showed a good selection of Zonal Pelargonium trusses. (Silver Banksian Medal.)

A large collection of show and fancy Pelargoniums was set up by Messrs. W. J. GODFREY AND SON, Exmouth. Such dark-flowered sorts as Black Diamond, Lord Bute and Prince John were very prominent and contrasted well with those of lighter shades. (Silver Banksian Medal.)

Messrs. CANNELL AND SONS, Eynsford, associated many fancy Pelargoniums of very attractive appearance, as well as several desirable bedding varieties, with their exhibit of Roses. The

compact pyramidal strain of Myosotis was particularly good. (Bronze Flora Medal.)

SWEET PEAS.

Messrs. DOBBIE AND CO., Edinburgh, had the finest Sweet Peas in the show, the collection forming part of their magnificent exhibit at the end of tent No. 4. These flowers lend themselves to effective grouping, and full advantage was taken of this fact, the exhibit being of a very decorative character. It included numerous novelties and the best of the older sorts.

Mr. J. STEVENSON, Wimborne, exhibited numerous novelties of his raising in a very attractive exhibit. Stevenson's White Hope, clear soft rose; Peace, pink; Charity, crimson, a very big bloom; Golden Glory, orange-scarlet, and Victory, salmon-red, are all varieties of merit. (Silver-gilt Flora Medal.)

Messrs. BIDE AND SONS, Farnham, showed good blooms of such fine varieties as Constance Hinton, Mrs. R. Hallam, Ruth Bide, Lady Hunter, President, and Farnham Lavender. (Silver-gilt Banksian Medal.)



THE CHELSEA SHOW.

FIG. 122.—IRIS BRACTEATA.

(See awards by the Floral Committee on p. 286.)

Anzac is new; the colour is after Marks Ley—bluish-mauve wings and rosy-maroon standard, tinged with white. It is a very large bloom. Tea Rose is rich cream colour, Dobbie's Orange was very fine, also Jean Ireland, Frilled pink, Henry Ohm, Lavender George Herbert and Constance Hinton. (Gold Medal.)

Messrs. A. DICKSON AND SONS, Belfast, showed Sweet Peas, in which their fine scarlet variety President was given place of honour. (Silver-gilt Flora Medal.)

Messrs. PIPER AND SONS, Bayswater, showed varieties of Sweet Peas, the collection embracing most of the best varieties in cultivation, represented by blooms of fine quality. (Silver-gilt Banksian Medal.)

Messrs. R. SYDENHAM, LTD., Birmingham, showed a small collection, for which a Silver Banksian Medal was awarded.

TULIPS.

Adjoining their exhibit of Irises, Messrs. WALLACE AND CO. arranged a tasteful group of Tulips.

with spikes of Solomon's Seal and plants of *Eulalia*, with a selection of Flare Poppies. Most conspicuous of the Tulips were The Moor, Chameleon, Beauty of Bath, Boadicea, and Jules Fabvre. (Silver Flora Medal.)

Darwin and Cottage Tulips played a great part in the arrangement by Messrs. WATERER, SONS AND CRISP, LTD., Bagshot, who relieved the many vases of flowers by interspersing Japanese Maples, vases of Lupins, and other hardy flowers. (Silver Flora Medal.)

Messrs. R. H. BATH, LTD., Wisbech, associated many Darwin and Cottage Tulips with hardy herbaceous flowers. Of the Tulips, Europe, Bijou, Flambeau, Princess Juliana, and *Gesneriana lutea* were particularly charming. (Silver Flora Medal.)

Darwin varieties predominated in the exhibit of Tulips by Messrs. HOGG AND ROBERTSON, Dublin, and these were all of large size and in fresh condition. Mrs. F. Sander, Marcella, Rosetta, Europe and Cupid are the names of a few varieties well shown. (Silver-gilt Flora Medal.)

A splendid vase of the glossy, almost black variety, La Tulip Noire, in the collection from Messrs. ALEX. DICKSON AND SONS, Newtownards, was most fascinating. Large vases of John Ruskin, Bouton d'Or, Greuse, Eclipse, Ruby, Clara Butt, and many other May-flowering sorts were all beautiful. (Silver-gilt Banksian Medal.)

Darwin and Cottage varieties predominated in the Tulip exhibit from Messrs. SUTTON AND SONS, and of these Flamingo, Rose Harpur, Crewe, Aubere, Golden Goblet, and Ellen Willmott were in good condition, while fulgens lutea was represented by very richly-coloured blooms. (Silver-gilt Banksian Medal.)

Messrs. BARR AND SONS, King Street, Covent Garden, had an imposing display of Tulips, and showed splendid flowers of Mrs. Moon, Black Chief, Mrs. Potter Palmer, Primrose Beauty, Sophrosyne, and George Haywood. (Silver-gilt Banksian Medal.)

RHODODENDRONS AND AZALEAS.

The exhibit of hybrid Rhododendrons from Messrs. WATERER, SONS AND CRISP, Bagshot, was in the form of two large beds filled entirely with this indispensable hardy shrub. Due prominence was given to the handsome variety Pink Pearl, which was represented by a multitude of enormous, perfectly formed trusses. Although smaller in all its parts, Corona, of indescribable colouring, was equally beautiful, and received much admiration. Most gorgeous of all was the standard and densely flowered bushes of Bagshot Ruby. Other excellent sorts were Mrs. C. E. Stirling (large truss of blush) and Cynthia (bright rose). (Gold Medal.)

Messrs. R. AND G. CUTHBERT, Southgate, made their customary display of gorgeous Azaleas. Besides a great variety of the deliciously fragrant Ghent varieties a mass of *A. sinensis* in the centre of one group delighted the eye with its rich, warm colouring. There were many desirable varieties, both single and double, of *A. rustica*, and amongst the novelties we noted several varieties of *A. occidentalis*, of which delicatissima and superba were especially charming on account of their delicate colouring. (Silver-gilt Flora Medal.)

A large circular group of unnamed hybrid Rhododendrons was contributed by R. L. MUND, Esq., Sevenoaks (gr. Mr. Hall), and it was composed of splendidly flowered bushes. (Silver-gilt Banksian Medal.)

Messrs. J. PIPER AND SON missed large numbers of the attractive *Azalea amoena* in a big diamond-shaped bed on the ground, and this provided an effective blaze of rich colour. (Silver Banksian Medal.)

Messrs. CARTER AND CO., Raynes Park, had a smaller group of Pink Pearl and other Rhododendrons, associated with Ghent Azaleas.

Messrs. GEO. BUNYARD, LTD., showed Rhododendrons in variety. (Silver Banksian Medal.)

EXCELLENT EXHIBITS OF LILAC.

Several very beautiful groups of Lilac attracted much attention by reason of the gorgeous colouring.

Mr. CHARLES TURNER, Slough, displayed bunches of cut varieties of merit, and included

Madame Abel Chatenay, Marie Legraye, Congo, and Charles Joly. (Silver Banksian Medal.)

Mr. R. C. NORCUTT, Woodbridge, showed splendid pot plants, and of these it was the floriferous standards that appealed to the majority of the visitors. The double white varieties, Miss Ellen Willmott and Jeanne d'Arc, and the dark sorts, Souvenir de L. Spath, Réaumur, and Charles Joly were also admirable. Amongst those of lighter colour President Grey was especially noteworthy, as also was the single white variety, Marie Legraye. (Silver-gilt Banksian Medal.)

Messrs. W. AND J. BROWN, Peterborough, had an especially fine collection of cut Lilacs, and besides many of the sorts already named showed Belle de Naray, Madame Lemoine, and Madame C. Perrière. (Bronze Flora Medal.)

The double white varieties were prominent in the exhibit from Messrs. PAUL AND SON, Cheshunt, who showed Jeanne d'Arc and Miss Willmott. Adjoining the Lilacs were Caragana, Chamaelir, Ribes lacustre, and a few other uncommon shrubs.

CLEMATIS IN POTS.

Messrs. G. JACKMAN AND SON, Woking, contributed a circular group of magnificent Clematises in pots. Perhaps the most noteworthy variety was Crimson King, which gained an Award of Merit. Ville de Lyon is almost as bright in colour and even more free-flowering. The best of the lavender-blue sorts was Lady Northcliffe, while Lasurstern was an admirable purplish-blue sort. Mrs. George Jackman, satiny-white with a creamy bar, and the popular Nelly Moser were also worthy of praise. (Silver-gilt Flora Medal.)

Adjoining their large group of Chinese shrubs Messrs. J. PIPER AND SON showed a large number of Clematises smaller in size than the foregoing, but very floriferous and of good cultivation.

HARDY PLANTS.

Messrs. R. WALLACE AND CO., Colchester, had four irregular groups, one entirely of Tulips, another of Irises, a third of Lilies and other border flowers, and the group of shrubs described on p. 291. The Iris collection was rich in choice varieties and species, including many hybrids from the late Sir Michael Foster's collection. One of the best was Shirin, a cross from one of the pallida section and ibirica. The falls are beautifully veined with purple, the standard being violet-purple. Miss Willmott, white, with gold beard, and Shiraz, purple, with a deeper purple fall, also deserve mention. The group of mixed subjects contained new Primulas, stately Eremuri, coloured Astilbes, Lilium Brownii, L. Krameri, L. Martagon album, forms of L. longifolium and other Lilies, Gladioli, and other flowers of interest. (Silver-gilt Flora Medal.)

Mr. AMOS PERRY, Enfield, had a large exhibit of hardy border flowers, in which many novelties and choice varieties were seen. His fine Oriental Poppies in shades of rose, salmon, blush and scarlet were a feature, and there were numerous beautiful Irises, of which Iris Cengialti Perry's variety is new. The lavender-purple falls of this variety are crowned by a conspicuous white beard; the standards are a paler colour than the falls. Amongst a general collection of hardy flowers on stonework were *Celmisia coriacea*, *Lewisia Cotyledon*, *Dianthus Fosteri*, with crimson-magenta coloured blooms, a brilliant bit of colour for the rock garden. (Silver-gilt Flora Medal.)

Messrs. BARR AND SONS, King Street, Covent Garden, showed a mixed collection of hardy flowers in which the best garden subjects figured. The wealth of fine things included Pyrethrums, of which the variety Iris Barr, soft pink, is new; Oriental Poppies, Irises, Geum Mrs. Bradshaw, an early flower that soon makes the border gay with its delightful scarlet blooms; Eremuri in variety, Paeonies, *Linum narbonneense*, *Oxalis braziliensis*, and Lupins. (Silver-gilt Flora Medal.)

Messrs. BEES, LTD., Liverpool, exhibited a raised stand, planted with rare and choice Alpines, and crowned by a not very impressive centre-piece of white Brooms and Clematis. There was much to interest the lover of hardy and Alpine plants in this firm's new introductions from China. Of these we noticed Rottlera

Forrestii, a Gesneriad with pale yellow "bells" and Ramondia-like foliage; Roscoea cautiloides with pale-yellow or lemon-coloured flowers; R. Humeana with purplish flowers, one plant being almost vinous red; Primula Menziesiana, with a head of lavender-purple flowers very like P. nutans; Clematis chrysocoma, with flowers rather larger than C. montana and blush colour—the flower-stalks are 12 inches or more in length; Primula Smithiana, having a mealy inflorescence and petals of Jasminum-yellow; *Verdenia candida*, *Primula tibetica*, P. Reidii, and many others. (Silver-gilt Flora Medal.)

Messrs. WHITELEGG AND PAGE, Cuslehurst, showed Alpines arranged amongst old weathered sandstone, imitating in a very natural manner the habitat of these delightful floral gems. Adown a valley swept a drift of Phlox Vivid, the bluff on one side overhung with the long inflorescences of Saxifragas Cotyledon platyphylum and on the other another Saxifrage of this type, having as long but denser spikes. In appropriate spots were such plants as Ourisia coccinea, Dianthus neglectus and Globularia nudicaule. (Silver-gilt Flora Medal.)

Messrs. G. JACKMAN AND SON, Woking, arranged a circular bed of garden flowers that looked very fresh and bright late in the day. It was a piece of clever colour-blending, in which Lupins, Lilies, Verbascums, Delphiniums, Primulas, Lavatera Olbia, Poppies and the like played a part. (Silver-gilt Flora Medal.)

Messrs. GEO. BUNYARD, LTD., Maidstone, had a border of Irises, with flagged path set with Alpines, leading to a border of Rhododendrons and Eremuri at the back, relieved with Bamboos and Acer Negundo. The Irises made a great mass of fine colours. (Silver-gilt Flora Medal.)

Mr. J. C. ALLGROVE, Langley, had a small collection of select plants, many being newly introduced from China. The stately Primula capitata, P. Beesiana, P. sulphurea—said to be a yellow form of P. tangutica; P. Bulleyana, P. sibirica var. chinensis, P. Forrestii, and the beautiful P. conspersa that gained an Award of Merit (see p. 286), are a few of the many Primulas, whilst others of interest were Oxalis eumaphylla, Dianthus squarrosus and Aster Purdomii, similar in habit but much earlier than A. alpinus. The long, narrow petals are rosy-lilac colour, and the disc is golden with a ring of outer pink filaments. There was a large group of Paeonia Veitchii, a hardy species with very decorative growth and bright carmine single flowers. (Silver-gilt Flora Medal.)

Mr. R. C. NORCUTT, Woodbridge, exhibited plants of Senecio multibracteatus flowering profusely in 6-inch pots. The beautiful rosy-pink blooms are set off by a rich golden disc. The plant was illustrated in *Gard. Chron.*, May 22, 1915, p. 273. (Silver Banksian Medal.)

Mr. JAMES McDONALD, Harpenden, showed his grass fabric for the quick making of lawns, and largely used for draping balconies and table decorations at functions. The exhibit included numerous ornamental grasses and dried specimens of lawn and other grasses. (Silver Banksian Medal.)

Mrs. LLOYD EDWARDS, Bryn Oerog, Wales, showed baskets of hybrid Saxifragas and other border flowers, for which a Silver Banksian Medal was awarded.

Mr. FRANK LILEY, Gouthusey, showed bulbous plants in variety such as Ixias of choice varieties, Sparaxis, including the beautiful variety Constance, and Irises, the last including Pavonia, a tiny gem known as the Peacock Iris, and I. lusitanica, an early yellow variety of the Spanish type. (Silver Banksian Medal.)

Messrs. W. CUTHBERT AND SON, Highgate, had a panel bed of choice hardy flowers, the corners being raised, with Astilbes, Poppies, Pyrethrums, Campanula humosa, a semi-double, soft lavender-coloured variety of C. persicifolia; Verbascums, and a centre patch of Primula pulverulenta.

Messrs. J. CREAL AND SONS, Crawley, featured their novelties in Lupins in a collection of general garden flowers: Phlox Vivid, the brightest of the pink section of Alpine Paeonies, was unusually good in this collection.

Mr. JAMES DOUGLAS, Great Bookham, showed Auriculas as pot plants, all of choice varieties and with large trusses of blooms. (Silver Banksian Medal.)

Messrs. JOHN PIPER AND SONS, Bayswater, were awarded a Silver Banksian Medal for Alpines arranged among old weather-beaten sandstone, a splendid inflorescence of *Saxifraga pyramidalis* being a prominent feature. *Phlox Violet Queen* of the canadensis type was charming. This firm also showed hardy border flowers with Maples as foils, for which a Silver-gilt Banksian Medal was awarded.

Messrs. WATERER, SONS AND CRISP, LTD., arranged a big pyramid as a floor group, in which were noticed many good things. Lupins in blue, pink and soft mauve varieties, Pyrethrums, Poppies, Paeonies, Irises, and Geums were the principal subjects. (Silver-gilt Banksian Medal.)

Messrs. T. S. WARE, LTD., Feltham, had a raised mound of garden flowers in the largest tent. The centre was filled with blocks of Paeonies, Irises, Lupins, Verbascums, *Anchusa italica*, and similar tall growing plants, with Alpines in pans along the front. (Silver-gilt Banksian Medal.)



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FIG. 125.—*PRIMULA HEODOXA* (SLIGHTLY REDUCED)
(See awards by the Floral Committee, p. 286.)

Messrs. BLACKMORE AND LANGDON, Bath, showed Delphiniums in conjunction with their fine group of tuberous-rooted Begonias.

Hon. VICARY GIBBS, Aldenham House, Elstree (gr. Mr. E. Beckett), exhibited inflorescences of Gunneras, including a new one, probably a variety of *G. manicata*, found on a glacier in Chili in 1902 by Mr. H. J. Elwes.

Miss WILLMOTT, Great Warley, showed a beautiful *Tritonia* named Prince of Orange, a self-coloured variety of dwarf habit and very floriferous.

Messrs. J. CARTER AND CO., Raynes Park, were awarded a Silver Banksian Medal for Dahlias.

Mrs. P. MARTINEAU, Hurst Court, Twyford, showed seedlings of *Iris sibirica* from a garden in Massachusetts, U.S.A. They were refined flowers, the delicate looking falls being pencilled and veined with a variety of handsome colours, one of the most noteworthy having a metallic blue shade, bordered by pale brown and a white blade.

Messrs. H. CHAPMAN, LTD., Rye, showed hybrid Irises partaking of the Spanish type, but earlier, with more substance of stem and petal, and in a variety of charming colours.

Messrs. DOBBIE AND CO., Edinburgh, were awarded a Silver-gilt Flora Medal for *Antirrhinum* that constituted one of the most striking exhibits in the tent. The flowers were of numerous shades, and the spikes of unusual length.

Messrs. T. ROCHFORD AND SONS, Broxbourne, showed well-grown plants of coloured varieties of *Astilbe* (*Spiraea*) *japonica*. (Silver Flora Medal.)

Hardy flowers were also exhibited by Mr. W. MILLER, Wisbech (Silver-gilt Flora Medal); Messrs. B. LADHAMS, LTD., Shirley, Southampton (Silver Banksian Medal); Messrs. JOHN FORBES, LTD., Howick (Silver Flora Medal); Messrs. REAMSBOTTOM AND CO., Geashill, King's Co. (the collection consisting entirely of *St. Brigid Anemones*), (Silver Banksian Medal); Messrs. JARMAN AND CO., Chard (Silver Banksian Medal); Mr. REGINALD PRICHARD, West Moors, Wimborne (Silver Flora Medal); Mr. MAURICE PRICHARD, Christchurch, Hants (Silver-gilt Banksian Medal); Messrs. W. ARTINDALL AND SON, Sheffield (Silver-gilt Banksian Medal); Messrs. BAKERS, Wolverhampton (Silver Banksian Medal); Messrs. THOMPSON AND CHARMAN, Bushey (Silver Banksian Medal); Mr. G. REUTHE, Keston (Silver Flora Medal); Messrs. J. PIPER AND SONS, Bayswater (Silver Banksian Medal); Messrs. R. TUCKER AND SONS, Oxford (Silver Banksian Medal); Messrs. PULHAM AND SON, Epsom, Essex (Silver Flora Medal); Messrs. G. AND A. CLARK, LTD., Dover (Silver Flora Medal); Messrs. W. H. ROGERS AND SON, LTD., Southampton; Mr. CLARENCE ELLIOTT, Stevenage (Silver-gilt Banksian Medal); Misses HOPKINS, Shepperton.

HARDY TREES AND SHRUBS.

Although there were fewer groups of trees and shrubs out-of-doors than usual there were ample collections in the tents, and they were fully equal in merit to those of former years, while the Lilacs and hardy Azaleas were extraordinarily good.

In the open Mr. L. R. RUSSELL, Richmond, had two large groups. Maples predominated in one, and of these, besides a great many named varieties of coloured Japanese varieties there was a basket of seedlings which showed interesting variations in colour and form. It is said that 60 per cent. of the seedlings raised have coloured leaves. *Acer vitifolium* is a handsome green-foliage species of vigorous habit. Other desirable medium-sized trees shown were *Alnus laciniata* *imperialis*, *Betula pyramidalis* *fastigiata* and *Quercus pedunculata* *purpurascens*. Many flowering shrubs were also shown, and these included varieties of *Ceanothus*, *Cytisus*, *Olearia* and *Ledum palustre*. In a tent Mr. Russell showed floriferous little bushes of *Ceanothus Veitchianus*, *Cytisus Dallimorei*, with ornamental Vines and *Rosa Moyesii*. (Silver Flora Medal.)

Messrs. J. PIPER AND SON, Bayswater, exhibited a large group of Chinese and other hardy shrubs. (Silver-gilt Banksian Medal.)

Messrs. R. WALLACE AND CO., Colchester, associated Wistarias and such *Cytisuses* as *Firefly* and *Daisy Hill* with prostrate Junipers, *Veronica Hulseana* and other flowering shrubs. (Silver Flora Medal.)

Mr. G. REUTHE, Keston, Kent, showed many uncommon *Rhododendrons*, chiefly the half-hardy sorts which flourish in the warmer parts of these islands. *R. Roylei magnificum* and *R. campanulatum* were prominent. Amongst other shrubs we noted *Fagus fusci*, *Abelia floribunda* and *Embothrium coccineum*. (Silver Flora Medal.)

Topiary was not shown so extensively as usual, but Messrs. WM. CUTBUSH AND SONS (Silver-gilt Flora Medal) and Messrs. J. PIPER both set up

large collections of trained and trimmed examples of the topiary art.

Messrs. BARR AND SONS, Covent Garden (Silver Banksian Medal) and the YOKOHAMA NURSERY CO., Kingsway (Silver Banksian Medal) contributed a variety of miniature Japanese Gardens, complete with hillsides, rest-houses, and lakes spanned by rustic bridges and containing live goldfish. Many Cypress and Larches, of great apparent age, were also on show.

Messrs. W. FROMOW AND SONS, Chiswick, displayed a very large number of Japanese Maples out of doors, where they had on view nearly every possible variation of form and colouring. (Silver Banksian Medal.)

Adjoining his display of Lilacs Mr. R. C.



THE CHELSEA SHOW.

FIG. 124.—*PRIMULA HEODOXA* (TO SHOW HABIT)
(See awards by the Floral Committee, p. 286.)

NOTICE arranged a group of *Cytisuses*, Azaleas and other flowering shrubs, amongst which a standard of *Genista nigricans* was especially noteworthy. (Silver-gilt Banksian Medal.)

Viburnum plicatum, in tree-flowering bushes and associated with Ghent Azaleas, was the central feature of the group contributed by Messrs. J. CHEAL AND SONS, Crawley. Various well-coloured Japanese Maples, *Ceanothus dentatus*, *Cytisus Andreanus*, *C. Dallimorei* and a little group of *Leptospermum Nichollsii* all assisted in making an attractive display. (Silver-gilt Banksian Medal.)

FERNS.

Messrs. H. B. MAY AND SONS, Upper Edmon-
ton, showed a good collection of Ferns, composed of

choice examples. *Lastraea erythrorum*, *Lomaria attenuata pendens*, *Adiantum Veitchii*, and others supplied bright colour on their young fronds, which was in vivid contrast to the more sober green of such as *Adiantum decorum*, *Polypodium lycopodioides*, *P. Knightiae* and *P. crassinervium*. (Silver-gilt Banksian Medal.)

Messrs. AMOS PERRY, Enfield, Middlesex, arranged many excellent hardy Ferns. The varieties of *Polystichum angulare* predominated, and these were all splendid and illustrated the great diversity of this variety. *Athyrium*s were also especially good and we noted *Adiantum pedatum*, *A. p. Klondyke*, *Osmunda regalis cristata*, and *O. r. purpurascens*, in large and vigorous plants. (Silver-gilt Banksian Medal.)

FORMAL GARDEN.

The only formal garden was that which Mr. ERNEST DIXON, Putney and Roehampton, arranged, much on the lines of his exhibit of last year. The central feature was a pool, and around the sides *Rhododendrons*, *Azaleas*, and Japanese Maples provided bright colouring. (Silver Banksian Medal.)

FRUIT AND VEGETABLES.

A most praiseworthy exhibit of fruit was made by the Hon. JOHN WARD, Chilton, Hungerford (gr. Mr. C. Beckett). Melons were freely shown, and they were all of handsome appearance, while Royal Sovereign and King George Strawberries were of enticing aroma, testifying to their quality. Many bunches of Black Hamburgh Grapes, dishes of Cardinal Nectarines, Brown Turkey and White Marseilles Figs, and red and white Currants, all of high quality, combined to make an excellent display of the greatest credit to the gardener. (Gold Medal.)

Ripe Strawberries, of first size, in large punnets and on pot plants, were displayed by Messrs. LAXTON BROS., Bedford. Varieties of attractive appearance were Laxtonian, King George, and The Duke. (Silver Knightian Medal.)

Although not so extensive as on some former occasions, the vegetable display by Messrs. SUTTON AND SONS, Reading (see fig. 121), was equal in merit to the best traditions of the house. Golden Wax-pod Butter Beans and Plentiful, and Masterpiece dwarf French Beans, fruiting plentifully in 6in. pots, attracted their full meed of admiration, while the many dishes of other kinds were also of great value. Peas were represented by Sutton's Pioneer, Green Gem, Duchess of York, and Duchess of Albany. All the dozen or so varieties of Tomatoes were of brilliant colour, good size, and almost perfectly round shape. The new Potatoes of the various "Castle" type were also most excellent. (Silver-gilt Knightian Medal.)

Messrs. T. RIVERS AND SONS, Sawbridgeworth, were the only exhibitors of fruit trees in pots, and they displayed large examples of Peach Duke of York, Nectarine Cardinal, Cherries Early Rivers and Knight's Early Black in enviable manner, bearing ripe fruits. The smaller bushes of Oranges attracted a deal of attention, and this section was represented by Bittencourt St. Michaels, Egg Orange, Maltese Blood, and Maltese Oval. (Silver-gilt Knightian Medal.)

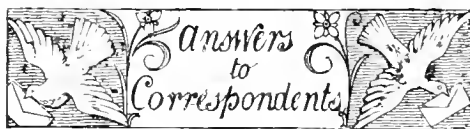
Obituary.

JAMES PREECE.—We learn with regret of the death, on the 13th inst., at Barnet, of Mr. James Preece, gardener for nearly twenty-five years at Warley Place, Brentwood. He lived during his early youth at Great Malvern, and commenced his gardening career at Rhydd Court. Before assuming the control of the gardens at Warley Place he worked at Leamington, Cringle Court, Beechwood Park, and other places. He was for many years a successful exhibitor at the London, Romford, Brentwood and other shows, and his services as judge were often requisitioned. After leaving Warley Gardens, some 5½ years ago, his health gradually failed, and he died at the age of fifty-three years, after a long illness.

W. FODEN.—Mr. William Foden, Marlowes Nurseries, Hemel Hempstead, died suddenly on the 17th inst., aged 75 years. He was a Lan-

cashire man, being a native of Rochdale, and had been in possession of the nurseries at Hemel Hempstead for 35 years. Mr. Foden was one of the oldest members of the Kew Guild. He was well known and highly esteemed by a large circle in the horticultural world.

M. FERDINAND JAMIN.—This French pomologist died at Bourg-la-Reine on April 2, at the age of 89. He had been a member of the National Horticultural Society of France since 1855, and had been six times vice-president. He was an active member of the French Pomological Society, and had many times presided over its congresses. He occupied the post of lecturer on fruit culture at the National School of Horticulture at Versailles. He was a chevalier of the Legion of Honour.



ANTIRRHINUM BEDS: *Constant Reader.* You state that your two borders of *Antirrhinums* run continuously, but are divided in the centre by an arch, each half-border being made up of nine beds. To a certain extent the arrangement of the colours will depend on the arch; if it is covered with Roses, for instance, on the colour of the blooms. However, the arrangement we suggest would be suitable if the arch is covered with Crimson Rambler Roses, or with any white- or pink-bloomed climber. We commence with one end of the border nearest to the arch. 1, Crimson Queen; 2, deep rose pink; 3 (here we recommend carmine pink, instead of the white you suggest, which would somewhat disturb the scheme); 4, brilliant scarlet; 5, orange-shaded scarlet; 6, old gold, shaded raspberry; 7, yellow, overlaid pink; 8, maize, shaded salmon; 9, yellow. Second border (again counting from the arch): 1, bright crimson; 2, carmine pink; 3, coral red (tail); 4, coral red; 5, Fire King; 6, delicate pink; 7, pale apricot; 8, orange; 9, yellow.

BLUE HYDRANGEAS: *J. D.* In order to obtain blue Hydrangeas, water the soil in which the plants are growing with a solution of iron. There is a preparation on the market known as "Azure," which can be used, and will save you the trouble of mixing.

FIGS FALLING FROM THE TREES: *A. B.* There is no disease present in the fruits, and the case is evidently one of a numerous class in which the Figs fail to mature owing to lack of fertilisation—a difficult process in the forcing house. You are not likely to have the same trouble with the second crop, as this develops at a period when more ventilation is given, and more insects are on the wing. Apart from the fertilisation question, it should be remembered that the Fig requires a good deal of moisture at the root; if the supply were to fall short, that in itself would be sufficient reason for the trouble you have experienced.

INSECTS ATTACKING CYCLAMEN: *T. S. N.* The grubs are the larvae of a weevil, which in its perfect state is well known in gardens as a small black or grey beetle, about ½ inch long. The beetles feed on the leaves of various kinds of plants. They lay their eggs in the surface soil of pot-plants, at the roots of garden Peas, in leaves, in the pith of stems, or in galls, according to the habits of the different species. The larvae have strong jaws, and begin voraciously feeding as soon as they are hatched. One species attacks Maidenhair Fern, and is very difficult to dislodge from the roots, to which it attaches itself, without either injuring the roots or turning the whole plant out of the pot and replacing it with fresh soil. It is, however, possible to destroy the larvae, even when below the surface of the soil, with bisulphide of carbon, or "Vaporite." There are various methods of catching the beetles. They feed at night, and by suddenly coming upon them after dark with a bright light, and shaking the plants on which they are feeding

(over a large sheet or greased paper), they can be induced to drop off, and can then be killed.

NAMES OF PLANTS: *W. A. T.* *Stauntonia hexaphylla*.—*S. C.* *Alnus* sp., probably *A. cordifolia*, but it is impossible to determine the species accurately without leaves and fruit.

SILVER LEAF DISEASE: *Thames* and *M. E. F.* A remedy sometimes recommended for this disease is cutting out the affected parts and burning them, care being taken to cut right back beyond every piece of discoloured wood. However, if the tree is beginning to die back you will have to destroy it; it will show the disease each year, and will never bear properly again. You will find in our issue for August 9, 1913, and subsequent issues, articles and letters on the subject of a treatment by means of injections of iron into the soil. Growers who have tried this have thought that it was in some cases efficacious, but no definite results were obtained. Some believe that the disease can be induced by overfeeding with nitrogen, and that it is liable to appear if too much stable manure is given.

SMALL ONION SETS: *H. A. C. (Wolverhampton).* These have long been known in French gardens, but so far have not been extensively grown in either private or market gardens in this country. The "sets" are really bulbils that are produced on the flowering stems of the tree, Egyptian or Bulb-bearing Onion, otherwise known as the Rocambole (*Allium Cepa aggregatum*). Instead of seeds being borne, the stem produces the bulbils in small clusters at the extremity. These are harvested in autumn and kept in a cool, airy place until spring. Then the bulbils or "sets" are planted out in prepared soil, and by the end of the season each one develops into a large bulb. To obtain a fresh supply of bulbils, the older bulbs must be retained, and the following year a fresh supply of bulbils will be obtained from them. There appears to be few varieties of the bulb-bearing Onion; one known as the Catawissa originated in America some years ago.

WHITE FLY: *J. W., Headingley.* This is a species of *Aleyrodes* which is often found in Tomato houses. An application of one of the vaporising compounds is usually successful, but if this has been tried and it has failed, you might use hydrocyanic gas, which is more powerful. This gas is exceedingly poisonous, and the acid itself is highly corrosive, so that the operation must be done with the greatest care, and only by a thoroughly responsible person. Each house to be treated should be carefully measured, as the proportions to be used depend on the size of the building. They are as follows:—Sodium cyanide, ½ oz.; phosphoric acid, ½ oz.; water, ½ oz.; for each 1,000 cubic feet. Be careful to obtain perfectly pure acids, and to use the exact amounts given. The chemicals should be placed in several saucers, and distributed through the house. At the strengths given the plants will not be damaged; one application is sufficient to kill green fly, and will probably be adequate for white fly. You may, however, double the quantities of all the ingredients, in which case it is possible that the young foliage of some of the plants will be injured. The best results are obtained by fumigating the house at dusk, and leaving it closed until the following morning. The plants must be perfectly dry; the temperature must not exceed 60°. The acid must not be placed in any metal vessel, or in paper, and the cyanide must be dropped into it direct. After fumigation the house must be tightly closed, leaving no chink whereby the gas could escape; and after it is opened in the morning care must be taken to see that no one enters it until it has become thoroughly aired. For fuller particulars see *Gard. Chron.*, July 25, 1914, p. 65.

Communications Received.—*J. S. H.*—*H. C. L.*—*Herb Growing Assoc.*—*W. Kelly*—*H. S. T.*—*W. F. R.*—*T. F. H.*—*S. J.*—*B. R.*—*P. S. E.*—*F. S. & Co.*—*M. T. H.*—*Reader*—*L. U.*—*B. G. A.*—*D. M. L.*—*K. Guild*—*C. E. S.*—*A. C.*—*A. B.*—*J. C.*—*& Co. (?)*—*J. A. P.*—*T. J. M.*—*Ron.*—*W. H. P.*

THE Gardeners' Chronicle

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PLANT WARFARE.

“THE survival of the fittest,” “the weakest must go to the wall,” “every man for himself”—these phrases resound on every side in these days of competition. By those who have ears to hear and eyes to perceive, the same battle-cries may be heard and the same results may be seen in the plant world, with its mighty population of trees, herbs, and more lowly organisms. On every hand the silent, relentless struggle goes on, never ceasing, the balance of victory constantly shifting as the conditions of warfare change. A glance at the hedgerows, meadows, ploughed fields and waste lands will reveal to the most casual observer that each habitat has its own particular type of population, that each bears a colony of plant species with a marked individuality of its own, sharply differentiated from that of the adjacent colony. Habitat is a complex of many factors, of which the texture, composition, and water content of the soil, the rainfall, light and temperature, the shade cast by trees and shrubs, and the interference of man and animals are but a few of the most obvious. These factors are constantly interacting and influencing one another, and the variations so caused are reflected in the behaviour of the plant colonists. If the soil be damp in one place, moisture-loving species, such as the King-cup, Ladies' Smock, and Wild Iris, find their opportunity and flourish as they cannot possibly do in drier spots; in the shade and shelter of the woods such plants as Bluebells, Anemones, and Primroses find a home, and spread, to the detriment of other plants, as they will rarely do in more exposed situations; on the arid wastes of the sandhills the Marram Grass flourishes, only to disappear gradually as the

dunes become fixed and other plants come in to assist in the colonisation. Where many plants are living in close association the balance is so finely adjusted that a very slight variation in local conditions is sufficient to give the advantage to one or another. The aspect of a meadow in a dry year is often very different from that in a wet season. In a droughty season Sheep's Fescue, Bird's Foot Trefoil, Meadow Pea, tall Fescue, and erect Brome tend to increase and spread, while Cocksfoot and Ryegrass are apparently unaffected and maintain their usual prevalence. In a very wet season, on the contrary, Creeping Bent and Yorkshire Fog find the conditions most attractive and make luxuriant growth. At the same time, the condition of drought or excessive moisture discourages other plants, and this discouragement gives the more plastic species yet more opportunity to assert themselves. When once the dominance of the latter plants has been established, it is not always easily relinquished, so that the after-effects of an abnormally dry or wet season may often be seen for many years in the change in the balance of composition of the herbage.

The cause of the antagonism between plants is still obscure. It is not wholly due to the lack of sufficient food material nor to a deficient water-supply, for when these factors have been compensated for the harmful interaction still persists. Fruit trees grown with grass are apt to be more or less unhealthy compared to those in which the surface of the ground is kept clear. There is evidence that the grass exercises a certain toxic influence over the trees, but the nature of this action is not clear, as even if a poison be excreted from the roots of the grass it is of so transitory a nature as to defy detection.

The practical aspect of this plant warfare is of vital economic importance. Every farmer and gardener tacitly acknowledge this fact in the steady campaign against weeds. Weeds are not necessarily harmful to themselves. They may not be poisonous or obnoxious in any obvious fashion, but it is simply because they enter the lists against the legitimate crops that they constitute a problem that every cultivator seeks to solve anew. Cultivated plants, almost without exception, demand a clear field if they are to put forth of their best and repay the labour that is expended upon them. The conditions of cultivation, the continual ploughing, harrowing, digging, and hoeing are inimical to the life of a great majority of weeds, but there are certain species which seem to find such conditions ideal, and which easily gain the upper hand if the slightest opening is given to them. All these plants are especially adapted to the peculiar conditions of their habitat. Some of them are annual in duration, and their whole energy is devoted to the production of seeds. Such are the Speedwells, Groundsel, Dandelion, Poppy, Charlock, Plantain, Chickweed, Shepherd's Purse, Wild Oat, and many another of the commonest wayside plants. In many cases the seeds have great inherent vitality and can remain buried for many years without losing their powers of growth. It is an established fact that great quantities of Poppies and Charlock will often appear when land is ploughed extra deeply or when an old temporary ley is broken up. Too much credence, however, must not be placed on the familiar local stories, which tell that great numbers of these plants will always appear with deep ploughing or when old pasture is broken up, even when they have never before been known to occur in the field, or even in the district.

Other weeds are perennial, and direct their attention largely to the storing of great quantities of food material in their underground parts, and are able to retire below ground in the winter and lie dormant till the next season. Thistles, Docks, Enchanter's Nightshade, Couch Grass, Knotty Couch, Sowthistle, and Coltsfoot are but a few of the many that lie dormant through the winter, and they are all most troublesome to eradicate because of the difficulty in removing all traces of the underground parts. With the onset of the growing season the seeds of the annuals germinate, and the perennials push up above ground with such strength and vigour that the crop is in danger of being overpowered by mere weight of numbers if the vigilance of the cultivator is relaxed.

The competition between weed and crop is not always that of simple occupation of the same territory. There are cases in which plants come to grips with one another in a very real sense. The Dodder spins its web over the stems of Clover and Gorse, the Yellow Rattle fastens on to the roots of pasture grasses and Barley, the Red Rattle is associated with Wheat, and the dingy Broomrape stands sentinel on the roots of Lucerne, Clover, and Sainfoin. Connection is established by means of suckers, whereby the stream of food material is diverted from the nourishment of the host plant to that of the parasite. The latter eats the bread of idleness and waxes strong, while the former, robbed of the fruits of its labour, sickens, and even dies, through sheer starvation.

A still more insidious onslaught is made by such plants as the Ivy and Bindweed, that clamber up the stems and trunks of other herbs and trees in order to gain full benefit of the light. At first the host merely provides support for its more delicate neighbour, but before long it finds itself gripped in an ever-tightening embrace, which causes more or less complete strangulation by the hindrance to the vital functions. It is no uncommon sight to see a sturdy full-grown tree slowly sapped of its vitality by strong-growing Ivy, until at last the tree is killed and the Ivy dominates the situation.

Perhaps the most familiar instances of plant warfare are the battles waged by lower forms of life upon the higher. Every gardener is only too familiar with the fungus pests which attack his plants, especially under greenhouse conditions. The “damping off” of seedlings, the various mildews, the “rusts” of wheat crops, and many other diseases, are all caused by minute plants which batten on the delicate tissues of their hosts. The dreaded Phylloxera or Vine disease is an instance in which untold mischief has been caused by a minute animal parasite, resulting in great commercial losses and ruin to many cultivators of the Vine.

In some circumstances the power of individual species to withstand great natural forces may be turned to advantage, as in the fixing of blowing sand by the planting of Marram Grass, and the prevention of the erosion of shingle beaches by belts of shrubby Suaedas (*Suaeda fruticosa*).

It is thus seen that the interaction of plants with other plants and with their habitats is of considerable economic importance, and is worthy of the attention of all who are engaged in cultivation. A working knowledge of the harmful effects of one plant upon another may prevent considerable loss of time and money, and an acquaintance with the beneficial interaction of certain plants, as in the case of shelter belts, may enable better crops to be grown. W. E. Brunchley.

THE VINERY.

TRANSPIRATION, CONDENSATION AND CHILLING.

A CONSIDERABLE amount of decay in the leaves of Vines in unheated greenhouses has recently come under my observation. I give a general superintendence to several such structures for different proprietors, visiting them about once a week, manipulating the growths, thinning the fruit, and giving general instructions. In five such houses much damage has taken place, and in another, treated solely as a vinery, which has had a little fire-heat constantly since the buds started swelling, and which is under the care of a fairly skilled all-round gardener, some leaves in the lower corners of the house are affected, but an unheated house, containing bedding and greenhouse plants, which has been constantly under my care, has not suffered at all. For some reason which I cannot explain, unless it is because they are hardier than most other varieties, Hamburgs have suffered least. The mischief has taken place on the first formed leaves, while those near the tips of the laterals, which were only partly expanded, and might be thought to be more tender, more immune.

For several days in succession the outside atmosphere was cold and still, the tips of the leaf divisions held large drops of water, which, when the Vine stem was touched, would come down in a heavy shower, but water would soon collect again. There was no damping done to either the Vines or the soil in any of these houses during this spell of weather, excepting when water was necessary for the roots, and after watering the evil was aggravated. The same thing happened to Tomatoes grown in an unheated house, the water on the tips of the leaves being very abundant, but no decay followed. In the case of Tomatoes recently potted from stove boxes, where the roots consequently had not taken much hold of the fresh soil, there was no deposit of water on the leaves, and in other cases, where older plants had become almost pot bound, there was very little moisture shown.

Generally the moisture on the leaves of a plant in the morning is supposed to be from condensation, when the temperature of the atmosphere rises more quickly than that of the plant, but when this occurs, if there are pipes in the house containing cold water, moisture will also collect on them, and on cold stones. In the cases mentioned there was not sufficient rise of temperature to cause condensation of the watery vapour in the atmosphere. Now scientists tell us that there are two other methods by which water may be conveyed to the leaves and also emitted from them, first by root pressure and secondly by the drawing up of water which is necessary for the transit of the feeding material and for transpiration. Personally, I do not understand that the difference between these two actions is material to the cultivator, and I am under the impression that the water thus collected on the leaves is principally due to transpiration. The temperature not being sufficiently high and the atmosphere not sufficiently buoyant to take up the watery vapour emitted, it is immediately condensed on the surface of the leaves.

The next thing to be considered is, How is the rotting of the leaves caused? It commences at the tips and spreads towards the centre of the leaf, where there is generally a green patch left. One of the houses is shaded at one end by trees during the early part of the day, and there is a door in the front of the house, about half-way along. The shaded end is not at all affected, but the other end is, and near the door the leaves have suffered most. I understand that when the sun suddenly appeared on one or two occasions the door and the top ventilators (which are in-

adequate) were opened, and the theory is that the evaporation was rapid and caused a chill, such as gardeners call scorching.

In the case of the house which I attend to personally a little air was given early every day during the dull, still weather, when its temperature was anything near 40°, and if the weather still continued cold it was closed after the leaves had become dry, or in any case early in the afternoon.

I have always been an advocate for ventilation being given before the temperature of a house rises, if it has to be given at all, but it now seems clear that there are occasions when it is necessary to be earlier still.

In the case of the house where fire-heat was applied, and yet some of the leaves were injured, I have noticed that it happened frequently at the corners, where the movement of the air is sluggish before the ventilators are opened, and I have advised the placing of a small shutter in the lower part of the front or side in such positions as to secure circulation there when necessary.

I am of opinion that the Vines would not have suffered much had no ventilation been given when the sun suddenly appeared after the dull spell, supposing the temperature did not rise above 95°. In some cases I know the ventilators were opened and closed two or three times during the day, and when this happens, unless one is actually living in the vinery, the ventilation is frequently given a few minutes too late.

I am allowing an extra leaf or two to be made on the laterals where some of them are injured. Where sub-laterals are not all removed, a few of these may be allowed to retain a leaf if the light is likely to reach them. Though the damaged leaves are unsightly, it is undesirable to remove the lower ones so long as they retain an inch or two of green colour, for no amount of good leaves further away from the base can help a lower bud to develop so well as a portion of a leaf in its immediate vicinity. Wm. Taylor.

ORCHID NOTES AND CLEANINGS.

MILTONIA FRANK READER.

THE power to combine the best characters of different varieties of a species by hybridising is well shown in this very handsome *Miltonia*, raised by Messrs. Armstrong and Brown, by crossing the famous *M. vexillaria Memoria G. D. Owen* with an unrecorded hybrid *Miltonia*. The plant illustrated has extraordinarily fine rose-pink flowers, showing the rich ruby-crimson mask on the lip as in the variety *Memoria G. D. Owen*. It is named in honour of Mr. Frank Reader, cashier of the Royal Horticultural Society.

ODONTOGLOSSUM CERVANTESII DECORUM.

A FOUR-FLOWERED inflorescence of this pretty Mexican *Odontoglossum* is sent by Richard Ashworth, Esq., Ashlands, Newchurch (gr. Mr. W. Gilden), in whose collection it has thriven well during the past twenty years at least.

The broad sepals and petals are white, the inner thirds around the column having a regularly arranged series of concentric broken lines of purplish-chocolate colour. The lip is one inch across, irregularly lobed, white with many rose-purple blotches of varying size and shape. This form is the most highly developed of a very variable species, the small type, *O. membranaceum*, with a more regular outline to the flowers, frequently seen in gardens, is more common, and represents the type. *O. Cervantesii*, *O. Rossii*, *O. nebulosum*, *O. citrosum*, *O. cordatum*, and other Mexican *Odontoglossums*, *Cattleya citrina*, and the Mexican *Laelias*, were formerly often grown in a special house called the Mexican House, which has a drier atmosphere than the *Odontoglossum* house of the present day; but growers who bear in mind their need of special treatment get good results without this special house. *O. Cervantesii decorum* was described in *Gard. Chron.*, 1878, p. 527.

HYBRID ORCHIDS.

(Continued from March 11, p. 140.)

Hybrid.	Parentage.	Exhibitor.
Brasso-Laelio-Cattleya Gilbertii	B.-L.-C. Veitchii × C. Mendelii	Armstrong and Brown.
Brasso-Laelio-Cattleya Queen of the Belgians	B.-L. Digbyano-purpurata × C. Mendelii	Flory and Black.
Cattleya Julienne	Skinneri × Mendelii	J. and A. McBean.
Cattleya Soramis	Mendelii × Empress Frederick	Mansell and Hatcher.
Cymbidium Eret	Pauwelsii × Gottianum	Sander and Sons.
Cymbidium Niobe	churnco-Lowianum × tigrinum	J. Gurney Fowler, Esq.
Cypripedium Commadore	Alebiades × Memoria Jenningsianae	T. Worsley, Esq.
Cypripedium Hazeldene	insigne Harefield Hall × Dowleri Hindemann	T. Worsley, Esq.
Cypripedium His Majesty	Pollettianum × Germaine Opoix	T. Worsley, Esq.
Cypripedium Louvain	aurum × Lathamianum	Rev. J. Crombieholme.
Cypripedium Nebo	Arthurianum × Chamberlainianum	E. Ashworth, Esq.
Cypripedium The Don	bellatulum × Fulshawense	T. Worsley, Esq.
*Cypripedium Tom Worsley	Actaeus langleyense × Helen H.	T. Worsley, Esq.
Laelia Lorna	Cowanii × purpurata	J. and A. McBean.
Laelia Cattleya Australia	L. tenebrosa × L.-C. luminosa	Sander and Sons.
Laelia Cattleya Canada	L. C. Dominiana × C. Schröderae	Sander and Sons.
Laelia Cattleya George Branch	blechleyensis × G. S. Ball	C. J. Lucas, Esq.
Laelia Cattleya Niobe	L. Jonghena × C. Enid	Stuart Low and Co.
Laelia Cattleya Sir Mervyn Buller	C. Mossiae × L.-C. Mrs. Temple	Armstrong and Brown.
Laelia Cattleya Verdun	L.-C. C. G. Roebeling var. Violetta × C. Schröderae	Flory and Black.
Miltonia Frank Reader	vexillaria Memoria G. D. Owen × C.	Armstrong and Brown.
Odontiada Alcantara	Oda, Cooksoniae × Odm. eximium	Charlesworth and Co.
Odontiada Auzar	Oda, Vynistekeae × unrecorded	Armstrong and Brown.
Odontiada Ashtoniae	Odm. Fascinator × C. Nozolina	Armstrong and Brown.
Odontiada Buenos Aires	Oda, Bradshawiae × Odm. Aireworth	Dr. Lacroze.
Odontiada Cereus	Oda, Charlesworthii × Odm. exvellers	Armstrong and Brown.
Odontiada Connie	Oda, Cooksoniae × Odm. Armstrongiae	Armstrong and Brown.
Odontiada Florence	Oda, Cooksoniae × Odm. Dora	Charlesworth and Co.
Odontiada Niobe	Oda, Bradshawiae × Odm. Jasper	Armstrong and Brown.
Odontiada Orion	Odm. Jasper × Oda, Charlesworthii	Mansell and Hatcher.
Odontiada Prince Albert	Oda, Zephyr × Odm. perculum	Flory and Black.
Odontiada Trebizond	Odm. Fascinator × Oda, Charlesworthii	G. W. Bird, Esq.
Odontiada Vida	Odm. Spectrum × Oda, Vynistekeae	C. J. Lucas, Esq.
Odontiada Warhamensis	Oda, Cecilia × Odm. ardentissimum	C. J. Lucas, Esq.
Odontiodium Warmhamense	Odm. Edwardii × Odm. tigrinum	C. J. Lucas, Esq.
Odontoglossum Ala	Edwardii × Queen Alexandra	De B. Crawshaw, Esq.
Odontoglossum ardentisper	ardentissimum × Jasper	C. J. Lucas, Esq.
Odontoglossum ardentissimum Memoria J. Gurney Fowler	crispum Solum × Pescatorei	Miss Louisa Fowler.
Odontoglossum Baileyi	King Emperor × amabile	Armstrong and Brown.
Odontoglossum Clodio	Hallio-crispum × Queen Alexandra	De B. Crawshaw, Esq.
Odontoglossum Diaden	Prince Leopold × crispum	Mrs. N. Cookson.
Odontoglossum Eugenia	cordatum × spotted crispum	J. and A. McBean.
Odontoglossum Fabia	Aghon × eximium	Armstrong and Brown.
Odontoglossum Panther	crispum × perculum	C. J. Lucas, Esq.
Odontoglossum Rosalind	Wiganianum × amabile	Mansell & Hatcher.
Sophr-Cattleya Rex	S.-C. Doris × C. Empress Frederick	Armstrong and Brown.
Sophr-Laelio-Cattleya Mense	S.-L.-C. Marathon × L.-C. callistoglossa	Charlesworth and Co.
Sophr-Laelio-Cattleya Xanthina	S.-L. Psyche × L.-C. Ophir	Flory and Black.

* Entered in list, March 11, with parentage of C. Commadore.

† Not crispum - Laubeauium, as in Orchid Committee report, May 20, p. 275.

SUGARLESS PRESERVES.

Now that sugar is scarce and dear, the making of jams in the coming season will be a problem to many thrifty housewives, and possibly sugarless preserves will be preferred to expensive jams. The Roumanians are a simple country folk, devoted to agriculture and farming, who live chiefly on the produce of their land. Though they have not as yet taken an active part in the present European conflict, their trade has been adversely affected by it, and various commodities have risen in price so considerably as to cause the people much privation. The Rev. R. Stewart Patterson, late Chaplain to the British colony in Bucharest, gave, a short time ago, an account of the changes in habits brought about by the rise in prices. He particularly mentioned the cost of sugar, which is double what it was a year ago, a fact which last autumn crippled the farmers and fruit-growers, who were unable to get rid of their produce. Thousands of tons were wasted, which in ordinary years would have been utilised for jam-making, as it is customary for Roumanian housewives to make all the preserves used in the household.

Small fruits, such as Strawberries, Raspberries, Currants, etc., having used up all the scanty supply of preserving sugar, Plums, Greengages, etc., would now mature only to rot on the trees, were it not for the making of a special drink, called "tsuica," a kind of Plum brandy, which Mr. Patterson describes as the national drink of Roumania. The manufacture of this spirit consumes a great quantity of Plums, but the farmers' wives claim a good portion of the fruit with which to make preserves. The following is the recipe for sugarless preserves made by Roumanian women:—Six and a half pounds of fruit are placed in a bain-marie or tinned or enamelled pan, with a large cupful of water. The vessel is then set by the fire or on the stove, and left to boil gently or simmer until the contents are reduced to a pulp of a consistency thicker than ordinary preserve. This is then poured into jars or other receptacles and allowed to cool, when covers of paper are tied on. This preserve keeps good for a considerable time, and is used for daily consumption, the sugar-preserved jams being kept for special occasions. This confection seems a little acid at first, but it is wholesome and quite palatable. *E. S. Romero-Todesco.*

FRUIT REGISTER.

APPLE REINETTE ROUGE ETOILEE.

This Apple has long been grown in this country under the name of Calville Rouge Précoce, an error of nomenclature which is apparent at a glance, as it is not a Calville, nor is it early, its season being November-December, and frequently even later.

Its origin is uncertain, but it has been grown in the province of Limburg and around Liège for many years, and in Belgium is—or was—widely distributed. The shops in Brussels in November and December are largely supplied with this variety under the name of Reinette Etoilée, or, in Flemish, Zoete Reinette. The German name is Rote Sternreinetze.

Its introduction into England probably took place about the middle of last century. In the *Descriptions of Apples*, by Thompson and others in MS. in the Lindley Library, there is a note which most probably refers to this fruit. An Apple was received from Stoeffels, the nurseryman, as Calville Rouge. Thompson's note runs as follows: "Not a Calville, but a handsome smooth-skinned red Apple, numerous white dots, flesh yellow, crisp, juicy, and sweet." As Thompson's knowledge of fruits was second to none at that time it is reasonable to hold that

it was a new variety to him, and therefore most probably also to this country. In the *Catalogue of Fruits* which he prepared in 1842 we find a Calville Rouge Précoce, but an "O" is prefixed, denoting an inferior fruit. The form is said to be that of a Calville, and the season August. It is, therefore, certain that it is not the fruit under consideration, and was most probably the Early Autumn Calville, which is known in France as "Roi Très Noble," and sometimes—though erroneously—in this country named Sops in Wine, from its red flesh.

a standard it does well, and is a moderate but annual cropper.

The fruit is round, slightly flattened, of medium to small size, almost covered with a rich carmine, and when approaching maturity on the tree the brilliant effect of this colour against the dark green foliage is admirable. The flesh is yellowish, with rosy staining, juicy, sweet, and pleasantly flavoured.

Both from the useful and decorative aspects this Apple is worthy of further cultivation. *E. A. Bunyard.*



FIG. 125. MILTONIA FRANK READER (SLIGHTLY REDUCED.)

The first English description I have found is in Dr. Hogg's *Fruit Manual*, fifth edition, where it figures as Early Red Calville (Calville Rouge Précoce). It is very surprising that Dr. Hogg did not see the misnomer and investigate the matter, but evidently he took it as correct, and no reference is made to its history. Two coloured plates and good descriptions had been published, one in the *Bulletin d'Arboriculture*, Jan., 1884, and the other in Bivort's *Album de Pomologie*, Vol. IV., p. 62. These figures rather exaggerate the rosy tinge of the flesh, at least as it is grown in this country. The name "Etoilée" is derived from the starry centre which is seen when the fruit is cut transversely. This character, coupled with the very distinct external appearance of the fruit, makes it one of the easiest to recognise, and its rightful name should be restored in this country.

Good, neat, compact growth, late flowering, and the habit of the fruits to hang singly, make the variety a desirable one for garden use. As

NOTICES OF BOOKS.

GARDEN PESTS AND HOW TO ERADICATE THEM.*

THE author of this little book tells us in his introductory remarks that his main object is to assist the amateur gardener to guard against and destroy the numberless insect pests of the garden, and he declares that for this purpose alone the book is worth "much more than its money." Even when we recognise the present cost of paper, we cannot agree with his estimate. In text and advertisement pages alike, the same proprietary articles, the same vendors of sundials, the same seedsmen, and the same makers of lawn-mowers are enumerated. But whereas there are reticence and pictorial illustrations in the advertisement pages, they are lacking from the text. Twelve times we are told (in three

* *Garden Pests and How to Eradicate Them: Practical Hints on Garden Culture.* By Howard Clements. (The Colston Publishing Co., Ltd.) 1s. net.

pages) to buy Mr. So-and-So's seeds, and we learn—from what we presume is a cultural hint—that the requisites for a good lawn are weed-killers, lawn sand, and Messrs. So-and-So's lawn mowers.

Of life histories of garden pests we are told next to nothing. No mention is made of soil-sterilisation as a means of eradicating soil pests; but we are told only too often that leather jackets and grubs may be destroyed by sprinkling this or that specific between or in the rows at seed time. So far as we can discover, eel worm is not mentioned, nor is Black Currant mite. Nothing is said of Bordeaux mixture nor of lime-sulphur spray fluid. Regarded as a serious book on plant pests, the work cannot be commended; regarded as a series of advertisements, we are of opinion that those written by the firms themselves and appearing in their proper place

shrub. There are many varieties of it, all of which are beautiful. The amateur will have a distinct grievance when he discovers that the only *Primula* which the author allows him for his greenhouse is *P. malacoides*. The author's zeal to give praise where praise is due is apt to outrun his discretion. For example, on pp. 36-38 the name of the seedsman whose seeds are extolled—no doubt with justice—recurs twelve times. Surely such praise is enough to bring the blush of shame to the cheek of the hardiest plant nurseryman. This is, indeed, to have greatness thrust upon one. It is perhaps as well that the work is so ill done, for it would be to add another and worse pest to horticulture if this style of book became general. Of this, however, there is no fear, for the sundriesmen will be quick to see that they can do their own advertising much more artistically themselves.

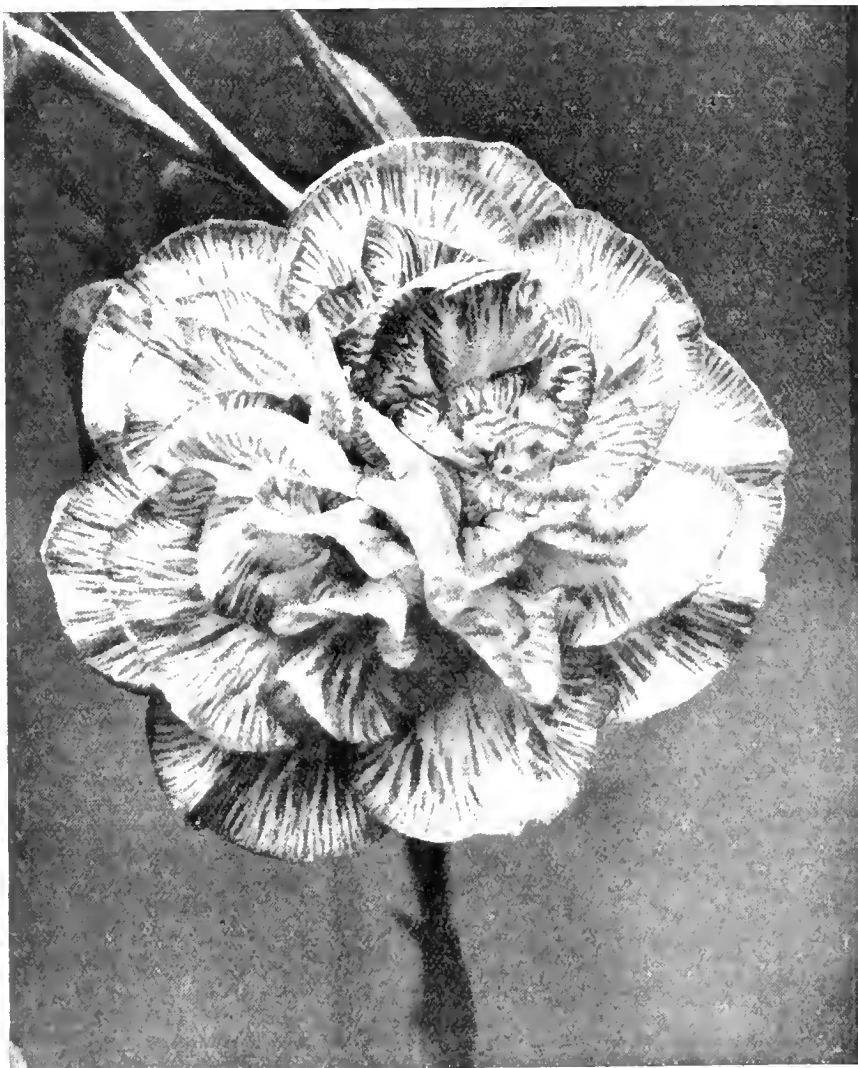


FIG. 126.—CARNATION SWEET ANNE PAGE.

are to be preferred. For, although the subjects referred to in the advertisements appear to be identical with those recommended in the text, we are of opinion that the former give fuller and sounder information than do the latter.

The book is eked out with "cultural hints" and articles on sundials, bulbs in grass and in bowls, and on the size of pots; but the "cultural hints" deserve no higher praise than that which is the due of the first part of the book. The amateur will not profit greatly by learning that the *Gardenia* "is a well-known greenhouse plant, pure white and delicately fragrant"; that *Hydrangeas* exist in "several varieties bearing white flowers"; "they are quite hardy and easy to grow," nor that *Laburnum* is a very favourite shrub and tree. His choice will be embarrassed by the statement that *Lilac* is another popular

CARNATION SWEET ANNE PAGE.

NOTWITHSTANDING the remarkable popularity of the Perpetual Flowering Carnation, not only for home cultivation, but latterly for flowering in the open border during summer, the older type of border Carnations that owes so much to the labour of the late Martin R. Smith and the late James Douglas is still high in the general appreciation. The fine variety illustrated in fig. 126 received the R.H.S. Award of Merit when exhibited by Mr. Douglas at the recent Chelsea Show. The flower is of a particularly good type and of large size, without the defect that many large blooms possess—of a bursting calyx. The variety is classed as a fancy, the ground being yellow, heavily flaked with mauve-purple, the shade being described by some as dull lavender.

The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

CANNA.—If necessary some of the plants of *Canna* may be transferred to larger pots. Pot firmly and use a rich compost, as the *Canna* is a gross feeder: neglect in watering and feeding with stimulants is often the cause of the plants failing to flower.

CALADIUM.—Large plants of *Caladium* need the foliage regulating and neatly supported by stakes: if this work is done in good time the plants will grow into a good shape. When well rooted let the plants have an abundance of moisture, and feed them with stimulants, or the leaves will soon pass their best. Shade from very bright sunshine must be given, or the leaves will become injured by scorching.

BOUVARDIA.—It will, perhaps, be advisable this year, in view of the shortage of labour, to plant *Bouvardias* out in a well-prepared border, about 18 inches apart. This will save much labour in watering. Should the weather be very hot at the time of planting, shade the plants during the hottest part of the day. They should be stopped once or twice during the early stages of growth to promote a bushy habit.

CLIMBING ROSES.—Thin the young growths of climbing *Roses* at regular intervals, for neglect in this matter will cause a general weakening of the plants and prevent the young shoots from becoming ripened. The plants are in active growth and need plenty of root waterings, supplemented occasionally by a liquid stimulant. Mulch the roots with well-decayed manure, if this has not been done already. During hot, dry weather spray the plants with rain-water late in the afternoons.

FORCING SHRUBS.—*Lilacs* which have been forced should be cut hard back and planted out-of-doors. Let *Ghent* and *Mollis Azaleas* receive every attention to enable them to complete their growths. If the young shoots are too numerous, remove some of the weaker ones. Give the roots plenty of stimulants until the flower-buds are matured. Remove the seed-pods from *Indian Azaleas*, and repot plants that need this attention. The *Azalea* is very subject to attacks of red spider and thrips, but both pests may be kept in check by a free use of the syringe.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

PLANTS IN PITS.—Those who grow early *Melons* in pits have experienced a bad season; if the plants are not doing well, and strong seedlings are available, I advise discarding the earliest plants and starting afresh. As the flowering stage approaches, all laterals showing fruit should be drawn up to the sun and light, and pinched when the young *Melons* begin to swell.

EARLY PEACHES.—When the fruits are gathered syringe the trees well night and morning, for this will keep the foliage healthy. Soak the borders with water, and guard against an arid atmosphere, which some wrongly consider conducive to the ripening of the shoots. Follow up the application of clear water with liberal doses of diluted liquid manure to trees that need a stimulant, for now is the time to build up the fruit-buds for next season's crop. Let the ventilators be wide open both night and day; if the roof lights are removable dispense with them entirely in about a month from now. If trees with fruits approaching ripeness are dry at the roots, water them freely with clear water once, but on no other occasion until the fruit is gathered. Foliage shading the fruit from direct sunshine should be drawn aside, for the sun will develop the best qualities in the fruits. Discontinue the use of the syringe where the fruits are ripening, lessen the amount of atmo-

spheric moisture gradually, and increase the quantity of air by leaving the top and bottom ventilators partially open at night. In chilly weather employ a little fire-heat. Warm, sweet air circulating about the trees is conducive to high flavour in the fruits, whereas moist, stagnant conditions mean badly-coloured and insipid fruits.

SUCCESSIONAL PEACH HOUSES.—Let the trees have regular attention in disbudding, tying the shoots, and thinning the fruits. Pinch gross shoots severely, and remove all young growth not required for fruit-bearing or furnishing the tree. Let trees that are swelling their fruits have an abundance of water, and in the case of old plants use stimulants freely. Where the drainage of the border is efficient, and the trees in good health, there will be little danger of over-watering at this season.

LATE PEACH HOUSES.—If the work of disbudding late Peach trees has not been completed, a final thinning may be done as the young shoots are tied in position. Each shoot should have a space of 6 inches from its neighbour; it is important to observe this where the fruit is required late in the season. Continue to thin the fruits, syringe the trees, and pay the same careful attention to watering and feeding as in the case of the earlier varieties.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

PROTECTIVE MATERIALS.—Tiffany blinds, nets and other materials which have been used for protecting fruit blossom from frost may be dispensed with. It will be well, however, to have them at hand for use in case of very cold weather, and they may be necessary in low-lying or very exposed gardens as a protection from cold winds, which are almost as harmful as frosts. All blinds should be dried thoroughly and labelled before they are stored for another season, in a building free from damp.

GOOSEBERRIES.—The berries have swelled rapidly during the recent hot weather, following heavy rains. Do not over-crop, but use the surplus berries while they are green for preserving and culinary purposes. If the berries are required for dessert thin them freely. To obtain extra large berries water the bushes copiously during hot weather, and mulch the roots with moisture-holding materials. Keep a sharp watch for caterpillars. Red spider is a great pest of the Gooseberry, and is particularly troublesome in gardens where the soil is naturally hot and dry. The pest is best destroyed by spraying with an insecticide. Red spider will not gain a strong footing if the trees are encouraged to make healthy growth and given timely attention in watering and mulching the roots.

APRICOTS.—If the fruits on Apricot trees have set well, they should now be thinned according to the condition and age of the tree. A healthy, established tree will naturally be able to carry a full crop without suffering any undue strain, whereas a recently transplanted tree might receive a severe check if allowed to carry too many fruits. In the case of trees against walls it may be necessary to water the borders, especially in the case of recently transplanted trees. When watering established trees, see that a thorough soaking is given—surface waterings are of little value, and may even be harmful. Afterwards mulch the borders in order that the moisture may be retained. If trees carrying good crops have not been recently manured, liquid manure should be given; this will assist the fruits to swell and keep the trees in health. Pinch back all shoots not required for extension; those retained should be secured to the wall or to wires.

WALL FRUIT TREES.—At this season, when fruit trees are in full growth, all trees on walls should be watched to see that they do not suffer from want of water. This applies especially to those on light soils and in hot, dry positions. In all cases keep the surface soil well stirred; this helps to retain all available moisture.

FIGS.—Figs are now growing rapidly, and are showing good crops of fruit. The growth must

be regulated according to the condition of the tree. Where trees are established, and in an ideal condition—i.e., making short, stumpy growths and keeping within bounds—very little pinching will be required. Wood which ripens well in the autumn invariably bears heavy crops of fruits, but trees which are making a lot of new growth must be thinned. The main shoots should be stopped at the fifth leaf. All shoots not required for extension should be reduced by pinching back to a leaf or two. Where the roots of Fig trees are not confined they invariably make very rampant growth, which is unfruitful, as it never ripens well. Cutting out a lot of wood merely aggravates the evil—the way to counteract the tendency is by root-pruning in the autumn. In any case, the shoots must be kept very thinly trained, in order that the maximum amount of sun may reach them, as the Fig is essentially a sun-loving plant. Where the roots are confined, care must be taken that sufficient water is supplied, or the fruits will fail to develop. Copious waterings are necessary under such conditions in hot weather, using manure-water where the trees are carrying heavy crops.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

LYCASTE.—*Lycaste Skinneri* and its varieties are now commonly cultivated, but *L. Balliae*, *L. Gratrixae*, *L. macrophylla*, *L. aromatica*, *L. Dyerana*, and *L. cruenta* are also desirable garden plants. It is advisable to keep the plants rather on the dry side, or many of the roots will decay. They grow well in a similar compost to that used for *Calanthes*. The plants may be grown near *Anguloas*, and afforded similar treatment. *Lycaste Dyerana* should be grown in a pan, and suspended from the roof-rafters in a similar way to *Cattleya citrina*.

PLEIONE.—Plants of *P. maculata* and other species are growing freely, and should be well supplied with water at the roots. When the receptacles are filled with roots, and the new pseudo-bulbs are formed, feed the plants once a week with weak liquid manure from the cowsheds. A position near the roof-glass of the intermediate house should be chosen for *Pleiones*, and air should be admitted on all favourable occasions. Sponge the foliage, and especially the undersides of the leaves, at intervals to prevent attacks of red spider.

ODONTOGLOSSUM CITROSUM.—Water the roots of *Odontoglossum citrosum* liberally until the pseudo-bulbs are fully developed, when water will only be needed at long intervals. To obtain a good crop of flower-spikes the pseudo-bulbs must be thoroughly ripened, and the plants kept comparatively dry in winter and early spring.

SPRAYING.—Many Orchids, and particularly *Cypripedium*, *Odontoglossum*, *Oncidium*, *Odontioda*, and *Miltoma*, are benefited by light sprayings overhead during bright weather, and the spraying should be done sufficiently early in the day for the foliage to become dry again before sunset. Spraying will favour clean, healthy growth, and check the spread of insect pests. The roots and stems of *Vanda*, *Aerides* and their allies may be sprayed whenever the stages are damped.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

CUCUMBERS.—The present is a suitable time for the planting of Cucumbers on partially spent hotbeds and in cold frames. Frames in which Celery, Early Carrots, Potatoes, or salads have been grown may be used for the purpose, and, generally, but little preparation for the Cucumbers will be needed, beyond placing a mound of rich soil in the centre of each division. Brick pits may also be utilised for this crop as they become vacant. Remove sufficient of the old soil to allow the mound of fresh compost a space of about 1 foot from the glass. Three plants will suffice for each light. The main shoot should be stopped at every two leaves beyond the fruits, and the growth regulated to prevent overcrowding. Ventilate with extreme caution, and, if

necessary, shade the frames lightly. Syringe the interior of the frame, and also the plants. Close the frame early in the afternoon to make the full use of solar heat. When growth is active the plants require an abundance of water, which should be made lukewarm.

LEEKS.—Plant Leeks as the successional plants become ready. Those previously transferred to the open should be well supplied with water.

CELERY.—Continue to transfer Celery out-of-doors as the plants become ready. If the weather is very dry, lift only a small quantity at one time to prevent undue exposure of the roots, which must not be damaged in process of transplanting. Water the plants immediately they are put out, and let those of the earliest-planted batch have an abundance of water. Remove the lights from the frames in which late plants are growing to secure sturdy growth.

POTATOS.—The soil between the rows of Potatoes cannot be stirred too frequently, and it may be hoed rather deeper than is usual for most crops; unfortunately, shortage of labour may preclude the possibility of frequent hoeings. Continue to earth up Potatoes that are sufficiently advanced in top-growth, for delay with this work results in making an easy task difficult, and, further, the plants are more likely to suffer injury.

THINNING CROPS.—The thinning of seedlings should be done immediately it is possible, or a serious loss of time will occur, with injury to the crops. It is best to remove surplus seedlings at intervals of a few days, and in all cases the soil should be consolidated around those that remain. The work is best done in showery weather, but is often necessarily performed during times of drought.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES.

PROPAGATING ROCK PLANTS.—Many rock plants are easily propagated, but where considerable numbers are to be dealt with it would tend to more certain success to prepare a frame specially for the purpose, as then the cuttings are under entire control as regards watering, shading, and ventilating. Choose a fairly open, sunny situation for the frame, as excess of sunshine can be counteracted by shading the lights either temporarily with mats or tiffany, or more permanently with a mixture of milk and lime. Mixed with skimmed milk, buttermilk, or sour milk, the lime will remain on the glass longer than when mixed with water. Spread a layer of leaves over the bottom of the frame, and over them place a few inches of finely-sifted, sandy soil, the proportion of sand to be not less than one-third of the mixture. When the surface has been made firm and even, the cuttings may be dibbled in and well watered. Among the more common subjects which may be dealt with in this way are *Alyssum saxatile*, *Iberis sempervirens*, *Sedum*, *Saxifraga*, *Sempervivum*, *Nepeta Mussinii*, *Cerastium tomentosum*, *Phlox subulata*, *Arabis*, *Thyme*, *Armeria*, *Arenaria*, *Helianthemum*, *Dianthus*, *Erodium*, *Cheiranthus*, *Campanula*, and *Veronica rupestris*. The frame should be kept close and shaded for a few days, but later air may be admitted. If a large stock of plants is required, the frame may be removed when most of the cuttings are rooted and used for protecting another batch.

PLANTING DAHLIAS.—It is now safe to plant Dahlias which were propagated from cuttings in the spring. Plants which have been shifted into 6 or 7-inch pots should make fine, vigorous, floriferous specimens if well treated. Trench the bed or border in which they are to be planted, and enrich the soil with a liberal quantity of manure; or make large holes for each plant and fork well-rotted manure in the bottom. The old-fashioned method of pegging the growths to the ground instead of staking them might be adopted in a time of labour scarcity. Dahlias raised from cuttings and grown in this way invariably make full growth.

SUMMER BEDDING.—The more tender subjects may be planted, and the setting out of summer bedding finished as early as possible. But in hastening matters do not leave tall plants with heavy heads unstacked, nor neglect watering where it is necessary.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.

Editors and Publisher.—Our Correspondents would obviate delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Letters for Publication. as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 6—

Roy. Hort. Soc. Coms. meet. (Lecture at 3 p.m.)
Scottish Hort. Assoc. meet.

WEDNESDAY, JUNE 7—

B.G.A. Executive meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 56.4°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, June 1 (10 a.m.); Bar. 29.6°; temp. 63.5°. Weather—Dull.

The Washing Out of Nitrates from Cultivated Land during the Winter.

All gardeners are aware of the fact that the nitrates present in the soil are reduced in quantity during the winter owing to their being carried away by percolation of rain water; but we imagine few cultivators have any idea of how great the loss may be in such a rainy winter as that which we have passed through this year.

In order to obtain accurate estimates of the loss of this plant food Messrs. Russell and Appleyard have kept records of the amount of nitrates present in soil during each month of the year. The loss is greatest on good and on light land, and least on heavy land; but on all it is considerable. Gardeners will note particularly that this loss of nitrate reaches its maximum in land that is in good condition and allowed to lie fallow during the winter. To give an example of the enormous reduction of nitrate which occurs on fallow land during the winter the following records may be cited:—

A certain fallow plot at Rothamsted showed a fairly steady increase in nitrate

from April to September. By the middle of the latter month the top 18 inches of soil contained 170lb. of nitrogen per acre in the form of nitrate. This is equivalent to about 10 cwt. of nitrate of soda. The value of this stock of nitrogen at current prices is about £8. With the winter rains the nitrate begins to wash out. The loss is severe in November and December, and by February the accumulated store has been reduced to 50lb. of nitrogen, the equivalent of 320lb. of nitrate of soda. The £8 worth of nitrate with which the soil began the winter has been reduced to about £2 7s. worth—a money loss per acre of nearly £6 sterling. Inasmuch as large quantities of nitrogen are essential for the production of crops, and particularly for the crops grown in vegetable gardens, it is evident that if this loss can be checked a vast sum of money will be saved. At present it has to be made good by the addition of nitrogen in one form or another. Dr. Russell suggests that green manuring by Mustard sown in September, and dug in, will help to reduce the loss, and for our part we are convinced that this is a method which deserves wide application by gardeners. Last year experiments in green manuring suitable for the vegetable quarters of gardens were started at the R.H.S. gardens at Wisley, and though it will take some time before the results of the experiments can be available we feel hopeful that they will show that gardeners can do much, by a well-considered system of green manuring, to reduce the loss of nitrogen from the soil they cultivate, and thereby increase the productiveness and profit of their crops. The use of a catch crop of this kind is, of course, to cause it to abstract from the soil a considerable quantity of nitrates, which are returned to the soil when the crop is dug in. Much of the nitrogen contained in the catch crop is in the form of proteins and other compounds, which must first be decomposed before they give back their nitrogen in simple form, and hence these compounds are fairly safe repositories of nitrogen so far as the leaching effect of rain is concerned. Hence the use of catch crops in conserving the supplies of nitrogen in the soil.

GATTON.—(see fig. 127).—Readers of the *Gardeners' Chronicle* are already familiar with many of the features of Sir JEREMIAH COLMAN'S garden at Gatton Park, Reigate. The issue for September 11, 1915, for instance, contained illustrations of the lake, pool, and Japanese gardens. The present photograph by Mrs. Mead represents the Lily pond in an enclosed garden. These beautiful grounds contain many individual features, complete in themselves, and so happily disposed that they contribute to the pleasing effect of the whole garden design.

WAR ALLIES' HORTICULTURAL RELIEF FUND.—By the generosity of the SPEAKER and Mrs. LOWTHER, a meeting was held at the Speaker's House, Westminster Palace, on May 24, in aid of the fund which is being raised by the Ladies' Committee of the R.H.S. War Allies' Horticultural Relief Fund. The Right Hon. LEWIS HARCOURT took the chair, and, in appealing on behalf of the object of the meeting, drew attention to the skill of the Belgians in horticulture, and to the indebtedness

of British gardeners, both of the present and of the past, to the horticultural enterprise of Belgium. The president of the Ladies' Committee, The Lady NORTHCOTE, C.I., appealed on behalf of the fund, and in the course of her speech showed, by reference to Belgium, the high degree of perfection which the horticulture of our Allies had reached when war broke out. Each part of Belgium specialises in some branch of horticulture, and the interruption of the trade and the damage done to horticultural stocks and plant are so widespread and greivous that unless help is forthcoming when peace is restored the countryside will be faced with ruin. No help can be given which is more likely to be productive than that which enables the small cultivators to re-start their industries at the earliest possible moment. Sir HARRY VEITCH, V.M.H., in supporting the appeal, expressed the gratitude of the Council of the Royal Horticultural Society to the Ladies' Committee and the president, The Lady NORTHCOTE, for the splendid services which they were rendering in connection with the Relief Fund. He drew attention to the fact that the Council of the Royal Horticultural Society was by no means confining its energies to obtaining funds for the relief of horticulturists in the countries of our Allies. Many months ago, the Council, realising what a large scope exists for growing vegetables and flowers in the grounds attached to the hospitals and base camps in Flanders, entered into communication with the commanding officers of the hospitals and camps, and offered to supply them, free of charge, with the necessary seeds and plants. The offer was accepted enthusiastically, and during the last few months many hundreds of consignments of vegetable seeds, flower seeds, flowering shrubs, evergreen shrubs, Roses, etc., had been sent to over fifty of the largest hospitals and base camps. He read communications from the commanding officers, showing how greatly these gifts are appreciated, and how much the seeds and plants are doing to provide convalescent soldiers and others with occupation, enabling the camps to obtain adequate supplies of fresh vegetables, and beautifying what would otherwise have been barren and desolate tracts of country. He ventured to think that, with the knowledge of these facts before them, the visitors to the Speaker's House would be encouraged to contribute to the full extent of their powers to the object for which the meeting was called. A vote of thanks to the chairman and speakers was proposed by Field-Marshal Lord GRENFELL, G.C.B., G.C.M.G., who referred to his visit last autumn to the front. He found that the officers in charge of the camps were most anxious to do something to improve the grounds under their charge, and, accordingly, the Council of the Royal Horticultural Society issued an appeal for bulbs to the horticultural trade. As a result of that appeal upwards of a ton and a half of bulbs were despatched for planting in the hospital grounds in Flanders. In the unavoidable absence of Lord HYLTON, Monsieur PHILIPPE DE VILMORIN seconded the vote of thanks, and in the course of his speech said that few in this country realised how great the need and how great the losses of the small cultivators who lived in the invaded territories, and he would be proud to communicate to his colleagues in France an account of the admirable work which is being done by the Ladies' Committee of the War Allies' Horticultural Relief Fund. He proposed a vote of thanks to Mrs. LOWTHER, to whose initiative the meeting was due. At the overflow meeting the chair was taken by Mrs. LOWTHER, and speeches on behalf of the fund were delivered by the Hon. Mrs. EVELYN CECIL and Monsieur PHILIPPE DE VILMORIN. Subscriptions to the amount of £151 were received, including £10 sent by the Horticultural Trades' Association, and a sum of £10, which Sir HARRY VEITCH had that day received anonymously from a former employee as "conscience money," which sum Sir HARRY handed to the chairman of the meeting for the benefit of the fund.

BRITISH GARDENERS AND THE RED CROSS.—The Red Cross Horticultural Sale which is being organised by the Royal Horticultural Society, and will be held in the Hall at Vincent Square on June 23 and 29, has received the recognition of their Majesties the King and Queen, who have consented to be patrons. The appeal of the R.H.S. for gifts has met with a splendid response from gardeners of all kinds. The horticultural trade has been particularly generous, and buyers at the sale will have a splendid choice of plants, no fewer than 2,000 lots having been already catalogued. The plants offered include many rare varieties, as well as old-established favourites. Mr. FARRER is sending Chinese plants, Mr. F. R. S. BALFOUR rare and valuable trees and shrubs, Mr. ELWES is offering many of the treasures of his Cotswold garden, Sir JEREMIAH COLMAN has presented a splendid selection of Orchids, and many other important contributions have been received. In addition to plants of all kinds, cut flowers, fruits, and

fat, the flowers laid on them and stacked for about fifteen hours. The scent is then extracted with alcohol. Full details of process are given in the *Perfumery Record Year-Book and Diary*, 1916.

TRIAL OF ONIONS AT WISLEY.—The Royal Horticultural Society will carry out a trial of autumn-sown Onions at Wisley during the ensuing season. Seeds for trial (one packet of each variety) should reach the Director, R.H.S. Gardens, Wisley, Ripley, Surrey (from whom the necessary entry forms, one for each variety, may be obtained), on or before Monday, June 19, 1916.

HOME-GROWN TIMBER.—On May 24, in the House of Commons, in reply to Mr. MACCALLUM SCOTT, who asked in what woodlands the Canadian lumbermen were now being employed, and what varieties of timber were now being cut out of season, Mr. ACLAND said: The Canadian Forestry Battalion are already at work in the

means of checking it, and the director of the Royal Horticultural Society's Gardens, Wisley, Ripley, Surrey, would be glad if any having the disease in the foliage or bulbs of their Narcissi would send specimens to him, with as full particulars as possible.

IMPORTS OF HOPS. It was announced in the House of Commons on Monday last that, in order further to reduce the consumption of beer, it was intended to prohibit the import of foreign Hops. This measure will have the additional advantage of economising in freight space, Hops being of a bulky nature.

AMERICAN VERSUS DUTCH BULBS.—An experiment into the relative merits of American and Dutch bulbs is being carried out in the Brooklyn Botanic Garden with the cooperation of the U.S.A. Department of Agriculture. According to a note in *The Florist's Exchange*, 6,000 bulbs, including eight varieties of single late Tulips,



FIG. 127.—LILY POND AT GATTON PARK, REIGATE.

(Photograph by Mrs. Frank Mead)

garden sundries will be sold. The secretary now appeals to all gardeners to purchase a catalogue, attend the sale, bid their highest, and "buy my English posies" for the benefit of the Red Cross.

FREAM MEMORIAL PRIZE.—The Board of Agriculture and Fisheries have awarded a Fream Memorial Prize, of the value of £7 2s. 3d., to Mr. ROBERT C. BROADFOOT, Nether Cairn, Kirkconnel, Dumfriesshire, a student of the West of Scotland Agricultural College, Glasgow, who obtained the highest marks in this year's examination for the National Diploma in Agriculture.

THE SCENT INDUSTRY.—The extraction of the odorous volatile compounds of flowers is carried out in many cases by what is known as the enfleurage system instead of by distillation. The principle embodied in the former system consists in the power of fats to absorb the volatile compounds to which the odours of flowers are due. In practice glass sheets are coated with

New Forest, in Windsor Forest, and in Devon. They will shortly begin operations elsewhere in England and Scotland. The timbers now being felled are chiefly coniferous. It is not possible under present conditions to have regard to those considerations which under ordinary circumstances make it expedient to fell timber during the winter months only. Replying to other questions, Mr. Acland said they were cutting a good deal of wood for pitprops. The timber was being felled by the authority of the Home-grown Timber Committee, who have fully considered the reasons for and against the felling of timber during the summer months.

A NARCISSUS DISEASE.—Growers of Narcissus have suffered during the last few years from the loss of a considerable number of bulbs owing to the attack of a disease which has so far proved impossible of cure. The Royal Horticultural Society has just appointed an investigator to study the disease, and, if possible, to devise

eight varieties of Darwins, and eight varieties of Narcissus, were planted last autumn. The result of the experiment indicates that American and Dutch Narcissi are about equal, but that the Dutch Tulips are far superior to those raised in America.

ECONOMY IN THE LONDON PARKS.—The estimates of the London County Council as regards expenditure on parks and open spaces has been reduced this year by £30,000, in addition to the reduction of £10,000 which took place in 1915. It is gratifying to note that in the East End of London, where the parks and open spaces are most sorely needed, and every scrap of colour and freshness should be preserved, the reduction is least. Everywhere else, though rigid economy is being practised, efforts are made to preserve the attractive appearance of the parks. The bulbs, which are naturalised over large stretches of turf, will still gladden the eye with their wild, free beauty.

It is the flower-beds chiefly which are being reduced in size, or, in many instances, dispensed with altogether. It is not, however, only by reducing the number of flowers that the requisite saving will be effected. Much labour is being dispensed with, and this will show itself in ways which are to be deplored; in weeds, creeping unchecked into the shrubberies and borders; in the long grass of the hitherto well-mown lawns; in the thousand and one little ways in which a garden may be neglected. Players of lawn tennis and other games will have to pay for the privilege of pursuing their favourite recreation. This has been the case with boating for some time past, out of which the L.C.C. has made a respectable revenue, and it is possible that the charge will be a permanent one. Lovers of music, who have enjoyed the music provided in the L.C.C. parks, will be disappointed at the action of the Council in the suppression of the bands. Instead of supplying their own music as hitherto, the Council will, for the present season, let out the various bandstands to voluntary bands, who will receive the takings from seats and programmes. But, after all, the main advantages of the parks are the sense of space and freedom, the fresh green of the grass, the grateful shade of the tall trees, and the cool breath of the wind in the branches, and these no economy can conjure away.

WAR ITEMS.—It is reported that the Chester rural local Tribunal has granted conditional exemption to three married men employed at the Eaton Hall Gardens of the Duke of WESTMINSTER. It was stated in evidence that of the original staff of fifty men thirty had left. Places were being kept open for eighteen men, and wages paid, less Army pay. Mr. BARNES, the head gardener, said he had unsuccessfully tried to secure other labour. The gardens had been open to the public six months of each year during the past twenty years, and the admission charges had brought in £16,000 for charities. The Duke had lent Eaton Hall as a military hospital, and the demand for vegetables was heavier in consequence.

—Sergeant PAUL MOTTET, son of M. S. MOTTET, the talented French author and journalistic writer, has been promoted to the rank of Sous-lieutenant for his bravery at Verdun, where he still is.

—M. JEAN LOUIS DREVET, of the 59th Territorial Regiment, and M. LOUIS DREVET, of the 106th Battalion of Chasseurs, both sons of Mr. CLAUDE DREVET, the well-known Lyons nurseryman, have been mentioned in the Order of the Day.

—The Committee of the Horticultural Society of the Rhône has passed a resolution that all members on active service be excused the payment of their annual subscriptions for 1916.

PUBLICATIONS RECEIVED. Bulletins, University of Illinois Agricultural Experiment Station:—No. 177, *Radium as a Fertiliser*. By C. G. Hopkins and W. H. Sachs; No. 176, *The Use of Commercial Fertilisers in Growing Carnations*. By H. B. Dörner, &c.; No. 178, *Recent Illinois Work on the Corn Root Aphis and the Control of Its Injuries*. By S. A. Forbes; No. 179, *A Biochemical Study of Nitrogen in Certain Legumes*. By A. L. Whiting; No. 181, *Soil Moisture and Tillage of Corn*. By J. G. Mosier and A. F. Gustafson; No. 180, *Observations and Experiments on the San José Scale*. By S. A. Forbes; No. 182, *Potassium from the Soil*. By C. G. Hopkins and J. P. Aumer. (Urbana, Illinois, U.S.A.)—Bulletin, No. 261, University of California, Agricultural Experiment Station.—*Melasma of the Walnut "Juglans regia"*. A preliminary report. By H. S. Fawcett. Berkeley, California, State Printing Office.—Bulletin, No. 334, U.S. Department of Agriculture.—*Directions for Blueberry Culture*. By F. V. Colville. (Washington: Government Printing Office.)—*Plantae Wilsonianae*, Vol. III., Part I. Edited by C. S. Sargent. (Cambridge, Mass.: the University Press.) Price \$2.50.

CLEMATIS CRIMSON KING.

THE new Clematis illustrated in fig. 128 has large vinous-red flowers. It is a notable addition to the showy varieties of the Jackmannii type, for its colour is distinct; in the younger blooms the shade approaches crimson. The plant received the R.H.S. Award of Merit when exhibited by Messrs. G. Jackman and Son at the Chelsea Show last week.

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

ROSCOEIA PURPUREA AND R. CAULEOIDES.—Both these choice plants are apt to disappear, not because the British climate disagrees with them, but because, owing to their lateness in starting growth, they are so liable to be destroyed when the borders are being forked over and weeded. To-day—May 25—*R. cauleoides* has just become visible in the shape of pointed shoots scarcely flush with the surface; yet it will probably open its lemon-yellow flowers in the first week of June, as it did last year and the year before. *R. purpurea* is even more tardy in putting in appearance, and is not yet visible; but it has more time before it, as it never flowers here until the middle of July. It is important to mark the site of both these plants with strong metal labels, or they are sure to be lost. Wooden labels are not to be trusted. The same applies to *Incarvillea Delavayi* and *I. grandiflora*, which here, at least, are very late starters. Herbert Maxwell, Monreuth.

PEACH AND NECTARINE FLOWERS FAILING TO SET (see p. 273).—I was much interested in the note by E. B. on the setting of Peach and Nectarines. I have had exactly the same experience this season. The first and second houses flowered and set well, there being four large trees in each house, but the third and fourth houses of later varieties have practically no fruit. The flowers were very weak in these later houses, and it did not surprise me much that they dropped, but the cause completely baffles me. The trees were never allowed to become dry at the roots, nor was red spider present. Last year they carried good, but not excessive crops, and every care was taken to ripen the wood properly. Puzzled.

—If Mr. Beckett had been describing my own case with regard to late Peaches not setting he could not have done it better. The only cause that I can attribute the failure to is that the borders became rather dry during late autumn and early winter, owing to a shortage of labour. Certain things had, perforce, to be left undone, and I fear our late Peach houses suffered in the way I mention. The trees blossomed profusely, and seemed to set fruits, but the latter nearly all dropped. In my forty years' experience as head gardener I have never had a similar case. W. Priest.

—Experience has taught me that there are several reasons for Peach and Nectarine flowers failing to set. Contributing causes are too low a temperature in the early morning compared to the mid-day temperature, overcropping, dryness at the roots, a deficiency of lime in the soil, adding top-dressings and mulchings until the roots are out of the reach of solar heat, and, lastly, watering with cold water. The use of hosepipes on fruit borders, and watering with ice-cold water, is a bad practice at any time. The maturing of the wood I consider of secondary importance. Alfred Child, Catesby House Gardens, Darenty, Northamptonshire.

—I read with much interest Mr. Beckett's note on the failure of his Peaches and Nectarines. Our indoor Peaches and Nectarines are also very light crops, although early trees have a fair sprinkling of fruit, but those in successional houses are almost a complete failure. The trees flowered profusely and the fruit set well, but the latter dropped when about the size of Marrowfat Peas—an unusual experience for me. The wood was in splendid ripened condition. The trees in question have been forced for years past, and as

we have not employed heat this year, I attribute the failure to a severe check (which the trees received after being well set), when the temperature of the houses fell to 36°, there being 11° of frost that morning. Peach trees in the open (which were protected by nets) have set a heavy crop, and the fruits are swelling well, but blister again is troublesome. Last year I used "Medela," which kept the trees in splendid condition and free from blisters and mildew. J. S. Higgins, Glynllivon Gardens, Carnarvon, N. Wales.

—I have experienced the same trouble with my Peaches and Nectarines as Mr. Beckett, and was a little relieved to learn that I was not alone in this trouble. I have never seen such a poor set of Peaches and Nectarines under glass as this season. We have only one house, a lean-to, unheated glasshouse, with a S.W. aspect, built and planted in the autumn of 1911. For the past two seasons the trees have borne splendid crops and the fruits have finished well. The trees are perfectly healthy; last September there was scarcely a trace of red spider on them. They flowered profusely during the first three weeks of March, a period (for that season of the year) unprecedented for rain and falls of snow, with fogs and a heavy, damp atmosphere most of the time. Consequently there was almost a complete absence of sunshine—conditions absolutely unfavourable for fruit-setting. I noticed that many of the flowers had stamens with short and stunted filaments; the anthers were imperfectly developed, and contained scarcely any pollen. Many of the flowers set fruit, which grew to the size of Marrowfat Peas and then dropped. I wonder if Mr. Beckett will consider that I have in any sense located the cause of the trouble. H. C. Loader, Erleigh Park, Reading.

THE COMMON OR NORWAY SPRUCE (see pp. 241, 262).—I dissent most emphatically from the opinions expressed by Mr. Elwes and Sir Herbert Maxwell about this tree. Instead of being "unduly praised" and "greatly over-rated," I think, considering its great economic importance, it has been more depreciated than any other coniferous species grown in these islands. Far from being "practically worthless," it is one of the most valuable of our commercial timber trees, and, with the exception, perhaps, of the finer qualities which come from the White Sea region, which are produced in climatic conditions such as obtain nowhere in Britain, quite as good Spruce timber could be produced in this country as is imported from the Continent if it were grown in similar sylvicultural conditions. It is in this that the fault lies. The growing of Spruce for timber has never been properly understood in this country, and when one does come across a good stand of it, as occasionally happens, it is, as a rule, the result of what the orthodox forester of the old school would call "neglect." Anyone who has seen the Spruce forests of the Continent knows perfectly well that the low value of the timber produced in this country is entirely due to wrong management, and not to any defect in climate or soil. The Common Spruce is essentially a tree of the mountains, attaining its best development in the humid atmospheric conditions which prevail there, but in moist localities, such as on the west coast of England and Scotland, it will attain to good timber dimensions almost down to sea level. Spruce timber forms a very large proportion of the coniferous timber we import, and it will be a long time before any other kind takes its place in the building and allied trades. The sooner, therefore, we put our bonse in order, and make an effort to produce a part, at any rate, of what we require, the better. I have often wondered, and still wonder, why the Government, instead of peddling, as they are doing with it, did not form a pure Spruce forest right away at Inverleiver. A solid block of 17,000 acres of Spruce would give some tangible evidence that we had at last made a start in State afforestation, and had the planting been vigorously prosecuted when the area was acquired, by this time we should have had something to show in this line. A. D. Richardson.

FRESH VEGETABLES FOR THE NAVY.—The call for fresh vegetables for the Navy and hospitals affords every gardener who has the labour an opportunity for skill in close cropping.

In normal times there are often what may be termed lingering crops—crops continued after they have somewhat gone out of season; for example, early Cabbage stumps may be left for sprouting. These lingering crops rob the land, and are not so remunerative as rotation crops. At the present time there is no need to allow any crop to linger, as the demand for fresh vegetables for the Fleet and hospitals is great. Early Cabbages may have been removed and Potatoes planted, or Carrots may be sown after Cabbage towards the end of May or the beginning of June; these late Carrots not only escape the ravages of the Carrot-fly, but furnish exceptionally fine-flavoured roots for late winter use. In winter vacant land may be filled with Leeks, Cabbages, or other Brassicas and Lettuce from the reserve beds, or sown with Turnips and Carrots, as fast as the summer crops are removed. If any of these are sown or planted as extra crops they may all be removed in time for spring planting. *G. H. H. W.*

APPLE AND PEAR GENETICS.—In my note pp. 281-282, by a printer's error, the extent of quotation, as given, is too long. The quotation ends at the word "Pears," in the fourth line, p. 282, and not, as given, as far as the word "Exhibition." The issue raised, "Can we say the same nowadays of the productions of the last forty years?" (et seq.) is my own observation on the citation. *H. E. D.*

PROTECTION OF HORTICULTURAL NOVELTIES.—The decision of the R.H.S. to establish a certificate, to be known as the Preliminary Recognition Card, as the Annual Report for 1916 states (paragraph 17), "for the purpose of recognising young plants and seedlings of promise and having them systematically recorded to the credit of their original raisers, introducers or owners before they arrive at a stage when a definite certificate or Award of Merit could properly be bestowed," is undoubtedly a step in the right direction; it, for the first time, indirectly raises officially the question of ownership in horticultural novelties. I write as a humble hybridiser, and as one imbued with the influences of my father, grandfather and great-grandfather, whose contributions to floriculture have been, rightly or wrongly, placed upon the pedestal of merit. I strike this personal note, not for publicity (I write under a *nom de plume*), but to establish my authority to say, "Here I am to speak of what I do know." I admit at once "having an axe to grind," but in the grinding of that axe—and this is the all-important point—I seek justice for all plant-breeders. I ask, of what real value is this new card of preliminary recognition, or the numerous conferences on nomenclature arranged by the R.H.S.? My reply is, they are of very little value without legislation to enforce their recognition, and it is with this point that I propose to deal. A man who has been the medium of bringing into being a beautiful flower can reap no legal benefit from his skill or research. Is this as it should be? The man on the street, in fact the average flower-lover, has indeed very little conception of the time, I should say the years, that are needed to complete a new plant culture, or the enormous amount of personal research, not to speak of the excessive waste, and consequently high expenditure, necessitated in plant hybridising. Then the resulting hybrids or new plants, if of sufficient merit, are introduced to commerce, and here I wish to point out that when they leave their home their mercantile worth, as far as the raiser is concerned, is practically nothing, due to the law permitting what I shall call "legal piracy," to interfere with the pecuniary reward of the rightful but evidently not the lawful owner. The moment a horticultural novelty enters the arena of commerce it is reproduced and sold by the community. I do not blame the community for so doing; it is a perfectly legitimate business. I do, however, blame the Legislature for not creating machinery to put a stop to such a practice. This, in short, is the position of the hybridiser, and it should be added that the plant collector who searches the world for unknown flowers is placed in exactly the same category. The irritating law informs the plant-breeder that he may feed his

novelty with a "patent manure"; he may also wash it with a "registered insecticide" applied with a "protected apparatus"—yes, even name his culture with a "copyright tally." I ask, with all seriousness, is it reasonable or just for the law to extend its protection to chemical inventions, pictures, sculpture, designs, music, plays, books, in fact any imaginable device, and deny it to horticulture? Is it not a crying shame that the men who have given their lives to the advancement of horticulture and to the beautifying of the gardens of the world should be placed in this absolutely unremunerative position by the State? Monsieur Antoine Rivoire, an eminent French horticulturist, in an article published in a Paris paper before the war, in reference to this question said: "There are two points agreed upon in France, (1) that the first indi-

ing of the proposed protection, and, further, the R.H.S. to have absolute power to grant or withhold such a document. The foregoing, I argue, provides a substantial foundation for a rational and just scheme of protection—it gives to the owner, be he rich or poor, the same privilege as is given to, say, the composer of a piece of music, the absolute distributing rights for a number of years; and while I would suggest that the purchaser retain the existing freedom to reproduce the novelty, if he so desire, for his own use and enjoyment, he should not sell during the protection period. Such legislation would also give power to the R.H.S. to put a stop to the fraudulent substitution of so-called novelties. Now, it may be suggested that such a scheme would establish excessive prices for the distributor. This argument, however, is at once negated when one considers that the purchaser is to have the right to reproduce, which consequently necessitates the distributor fixing his price at a figure which would cause such reproduction to be needless. I cry from the wilderness to the Parliamentary Committee of the Royal Horticultural Society established a year or so ago—"for using the great influence of the Society in initiating legislation in favour of horticulture"—to give this question their attention, so that when the war is over we may look for some remuneration for our labour. *Plant-Breeder.*

CULTIVATION OF HERBS.—In the *Gardeners' Chronicle* for May 20, p. 273, there is a communication signed "H. S. Thompson," respecting medicinal herbs. May I point out that one of the main objects of the Herb-growing Association is to market for its members, to control supplies, and let members know in advance what will be required, average prices obtainable, and give instructions in preparing? The 1,200 odd members are being formed into local centres, with secretaries who will control them and deal with the central body. Not only growing, but collecting must be organised, otherwise it may be thought Dandelions can be sent, if dried, or for drying, all the year round, instead of being fit for only a short, specified period. So with other wild herbs. A farmer has lately had the pleasant surprise of receiving £25 for material he was about to burn. In 1915 we imported over £71,000 worth of vegetable drugs, all of varieties we can grow or collect here. The wholesale druggists are of one mind to buy from home producers, and will continue to do so if the sellers can be organised. But this organisation can only be done by persons who can give time to go thoroughly into all details involved, which are very numerous. Collecting or growing at random by individuals can only end in failure, not only because dealers will not take small quantities or be troubled with numerous small correspondents, but also direction of experts is required to ensure things being harvested at the right period. They are useless otherwise. *E. L. Chamberlain.*

STAR OF BETHLEHEM (ORNITHOGALUM).—Ancient Sir H. Maxwell's interesting note, may I ask whether he or any other correspondent has tried the bulb of this plant for its gastronomic value, and, if so, whether it is pleasing to the palate? If it is a useful addition to the vegetable garden, some hints on cultural methods would be appreciated. *H. E. Durham.*

CATS AND ASPARAGUS.—A neighbour has been troubled by the loss of her Asparagus, the fat tops having disappeared soon after they emerged from the ground, leaving the bleached part of the stem sticking up. I was consulted, but could not solve the mystery, but one morning, during twilight, the lady saw a white cat acting suspiciously, and since then two other persons have actually seen the cat eating the heads. *Wm. Taylor.*

ROCK SALT AS A DETERRENT TO SLUGS.—I believe I have discovered a very effectual preventive against slugs, in common rock salt, preferably broken in pieces about the size of a thumb-joint. I made experiments by surrounding some slug traps that were baited with bran with the salt, and leaving others not surrounded. The traps that were not surrounded had plenty of slugs in, and those that were surrounded contained scarcely any. I have tried various other experiments, which all go to show that slugs will



FIG. 123.—CLEMATIS CRIMSON KING.

(See p. 300.)

vidual to register a particular novelty should be declared the lawful owner, and (2) that such registration should be recognised as international." With these two points I am in absolute agreement, and would embody them in a broad scheme for the removal of this grievance. I suggest that it is necessary to have a Bill placed before Parliament after the war seeking additional powers for the Royal Charter of the R.H.S., giving the Society permission to grant protection for the selling rights for a number of years of novelties—the scheme to be controlled by the Patent Office with the R.H.S. as its adviser, and the recipient of such protection to have the usual legal remedy given to other commodities in the case of an infringement of their protected rights, viz., an injunction and damages. A "Certificate of Distinctness" of a novelty to be essential to the grant-

not face the salt. The advantage of using rock salt is that in wet weather, when slugs are most active, the rock salt is not destroyed like lime and soot. I am not sure of the effect of the salt if it were to remain permanently on the ground, but there is no need for this, as it can be removed when the plants are out of danger, and before that time the amount dissolved and entering the soil would be very small. *T. Fred Haigh.*

A PLEA FOR THE GARDEN.—How often we find in the best regulated gardens of the present-day type some things as incongruous as those of "Cremorne" or "Rosherville" of long ago! It is surprising that in some gardens, otherwise beautiful, there still lingers a strong suspicion of those false Italian styles. We are rapidly losing touch with the garden, as a garden, and it is becoming a mere crowded place of artistically placed vases, walls, pergolas, and Lily ponds, without meaning or reason, and only a secondary thought, if they are considered at all, to the flowers and shrubs to be grown there. The first consideration on laying out a site is not the soil or position to suit the plants, but rather where to place the imitation stone sundial which you buy with the furniture, and which is generally in a prominent place where the sun doesn't touch it. That is of no consequence if placed at the end of a long stone-flagged path, most artistically paved with broken slabs, so that small, creeping plants can be placed between the joints for the special purpose of being trodden on. No self-respecting modern garden would be without this absurdity. In looking over the pages of your contemporaries it has struck me that Lily ponds and troughs for water-plants are invariably death-traps to children and old people. There are two forms I take exception to. The one that is placed across a well-defined walk or avenue, where the eye carries one beyond, and gives the assumption of a continuous safe path. The other where steps lead down from a summer house or terrace and plunge you up to the neck among the frogs. This is most likely to occur on a still, moonlight night after dinner. Yet one must dine. Where there is a river or stream, and every natural indication of water, there only is the appropriate place for a Lily-pond, and its only excuse. I remember seeing recently a sketch for one of the new "rheumatic" houses to be built in the river with a water-garden all round—and very nice it looked, on paper. It certainly had the advantage that you could fish out of the dining-room windows, but it was carrying the "Lily-pond" idea to its extreme limit. Everyone must have a rock garden nowadays, and one sees banks strewn with unsightly boulders, of all shapes and material, that would give any geologist fits, and of the most unlikely strata—often, of course, in the wrong position, and suggesting fearful earthquakes at a very recent period. But it cannot be dispensed with, and must fit in with the scheme of things regardless of what will grow upon it. But should there be no hillside, still we must have the precious rock garden, even if we have to build a wall and bank it up at the back. A rock garden we will have at all costs, and yet we despise the old lady who saved up all the best bits of coloured china and glass to place on her rockery, because she said "it made it look so bright and cheerful." One could imagine from the ponderous columns and beams which we call "pergolas" that they were the remains of Ionic temples, and the weedy creepers, out of all proportion to their size, one sees vainly trying to cover their ugliness, seems a waste of energy on Nature's part. They really want the height of an African forest to be appropriate to their colossal timbers. You have noticed, also, what a tendency there is at the present time to plant the garden with old oil jars and heavy terra-cotta vases, that look like the remnants of Belshazzar's Feast, or the overflow from the "Forty Thieves." I always have a great longing to play skittles when I see them. They are not beautiful, and not quite as useful as the drain pipe in the backyard employed in the same sad way. Why subject your flowers to these indignities and drag them up in these false positions? Near me there is a shed with a corrugated iron roof, on which is planted the *Ulex*. It is the idea being to cover up the unsightliness—but can anyone, especially a lover of his

flowers, conceive a more unsuitable place than this for an old favourite. The "vogue" for strong contrasts is responsible for the white garden furniture dotted about our lawns and now so fashionable, but to anyone with a sensitive eye this is as bad as newspapers scattered about, which, of course, would not be tolerated under any circumstances. All objects that glare, or attract attention, other than flowers, should be avoided, and even they should be judiciously handled. Modern gardens, I am afraid, are becoming too formal and very absurd. The old "pure English" garden had none of these embellishments, and I should say was more lovable—lived with one's flowers and knew them. Now they are only colour schemes, reckoned in mere shades, and the individuality of the flower is lost to the majority of amateur gardeners. Why cannot we go back to the old order of simple taste and leave all this make-believe Greco-Italian-Dutch formality alone. I think our flowers would look happier, and we should be more happy if there was nothing to distract our attention from them. *Edward Sivalas.*

WHITE FLY.—This pest, which forms the subject of an answer to a correspondent in the issue for May 27, is a great nuisance among plants of various kinds. I had charge of a house containing a miscellaneous collection of greenhouse plants, and found that the majority of them were more or less infested with it. The subjects most affected were Fuchsias, Abutilons, Bouvardias, Heliotropes and Pelargoniums. Not liking to use the poisonous hydrocyanic gas, I tried vaporising with nicotine. The first application killed all the perfect insects, but in a few days they were as numerous as ever. From this I concluded that the eggs were uninjured, and decided to fumigate a second time. This, however, did not effect a complete cure, and in order to make a clean sweep of the pest the house was vaporised four times at intervals of four or five days. Even then I found an occasional straggler engaged in depositing its eggs on the undersides of the leaves. The fly itself was easily killed, and a touch of methylated spirit made short work of the eggs without injuring the foliage. *W. T.*

SOCIETIES.

R.H.S. SHOW AT CHELSEA.

(Concluded from p 292.)

GARDEN SUNDRIES.

MAY 23-25.—Exhibits of the more bulky garden sundries, such as ladders, summer houses, and furniture were displayed in the Lime avenue. They were not nearly so numerous as usual.

The most attractive of these exhibits consisted of "old world stone garden ornaments," shown by Mr. HERBERT JONES, Bath. His exhibit consisted of a large, formal garden, furnished, and complete with plants.

Messrs. HOLDER HARRIDEN, LTD., Noble Street, London, showed by demonstration how easily and effectively their knapsack and other sprayers work. (Silver Banksian Medal.) Similar exhibitions were made by the FOUR OAKS SPRAYING MACHINE CO., Sutton Coldfield (Silver Banksian Medal), and the UNITED BRASSFOUNDERS AND ENGINEERS, LTD., Birmingham (Silver Banksian Medal). Mr. J. SINGLETON, Preston, and Mr. T. H. WEBSTER, Ingatestone, both showed attachments for fixing to watering-cans.

Messrs. GAMMA AND CO., Holborn, displayed an extensive assortment of tents and garden furniture (Silver Banksian Medal), and Messrs. LIBERTY AND CO., Regent Street, showed Japanese dwarf trees in a Japanese garden house and garden ornaments of various attractive kinds. Garden seats of comfortable design and good workmanship were exhibited by CASTLE'S SHIP-BREAKING CO., Millbank (Silver Banksian Medal), and DRAYCOTT AND METAL WORKS CO., Leicester, who included in their exhibit very comfortable lounges for invalids (Silver Banksian Medal); Messrs. HUGHES, BOLCKOW AND CO., Blyth (Silver Banksian Medal); and Messrs. MAGGS AND CO., Bristol, who also had inexpensive garden tents.

Ladders and garden steps, wheel-barrows and trucks, were present in great variety and of ingenious design. Of these, the chief exhibitors were Messrs. J. CHRISTOPHER AND SONS, Chancery Lane, London (Bronze Banksian Medal), Messrs. DREW, CLARK AND CO., Leyton (Bronze Banksian Medal), Messrs. H. C. PHILCOX, LTD., Brixton (Bronze Banksian Medal), and Mr. H. C. SLINGSBY, Old Street, London (Bronze Banksian Medal).

Messrs. PEARCE AND CO., Holloway Road, London, erected a small greenhouse, and fitted it with blinds of good form, and also showed boilers and summer houses (Bronze Banksian Medal). Messrs. C. A. PETERS, LTD., Derby, were awarded a Bronze Banksian Medal for their carbolineum wood preservative. The ECONOMIC FENCING CO., Billiter Street, London, set up cheap and strong fencing near the entrance.

Old garden ornaments, such as iron gates of exquisite workmanship, and beautiful leaden vases, were shown by Messrs. T. CROWTHER AND SONS, Fulham.

SUNDRIES IN THE TENTS.

Immediately inside the tent, and opposite the *Gardeners' Chronicle* exhibit of select illustrations of Orchids and other plants, and bound volumes of the *Journal* since its establishment in 1841, Mr. A. B. JOHNSTON, Cranleigh, showed turves of his excellent fibrous yellow loam. The MOLASSINE CO., LTD., Greenwich, manufacturers of Molassine Meal, showed their new fertiliser, Rito, and Chrysanthemums, Sweet Peas, Fuchsias and Tomatoes grown with and without it. There was a great difference between the plants which had received the manure and those that had not.

Messrs. WAKELEY BROS., Bankside, London, showed samples and plants illustrating the Hop manures which are of especial value on light soils. The old-established Thomson's Manures were exhibited by Mr. JAMES GEORGE, Putney, who also showed Mushroom spawn, Orchid peat, and fumigators. Messrs. PRENTICE BROS., LTD., Stowmarket, also showed samples of fertilisers. Insecticides and fungicides, which are such necessary adjuncts to successful gardening, were freely displayed. JEVES' SANITARY COMPOUND CO., LTD., Cannon Street, London, had a stall filled with specifics, including seasonable fruit tree washes. The ACME CHEMICAL CO., Tonbridge, included lawn sand, weed killer and insecticides in their exhibit, while Mr. PERCY BONYARD, Croydon, had a wide range of horticultural sundries, including pliable garden hose, fumigators, and insecticides (Bronze Banksian Medal).

Messrs. W. COOPER AND NEPHEWS, Berkhamsted, specialised in well-made spraying pumps, and showed also many brands of spray fluids. Messrs. E. A. WHITE, LTD., Paddock Wood, Kent, showed their various preparations for preventing and exterminating garden foes (Silver Banksian Medal). The well-known Sanitas Powder was also shown prominently. The popular Gishurst Compound, Gishurstine, as well as an economical paraffin and soft-soap emulsion, were displayed by PRICE'S PATENT CANDLE CO., Battersea, London, who also showed toilet soap.

Fascinating models of greenhouses, complete with ventilators, gearing, blinds, and boiler, were exhibited by Messrs. J. WEEKS AND CO., Victoria Street, London (Silver Banksian Medal).

Bronze Banksian Medals were awarded to Messrs. H. PATTISSON AND CO., Streatham, for horse boots, and to Mr. J. HAWS, Lower Clapton Road, London, for watering-cans.

ROYAL NATIONAL TULIP.

MAY 24 AND 25.—The annual exhibition of the National Tulip Society was held in the Chelsea Hospital grounds on the second and third days of the R.H.S. Show. There were but few exhibits, and with the exception of the classes for 3 Flamed and for 6 Breeder Tulips, the blooms were of only moderate quality.

Mr. C. W. NEEDHAM, Hale, Cheshire, was the most successful exhibitor; he won the 1st prizes in the classes for (a) 12 and for 6 Rectified Tulips; (b) 3 Feathered and 6 Breeder Tulips, was placed 2nd in the class for 3 Flamed and 3 Breeder Tulips, and won eight 1st and four 2nd

prizes in the classes for single blooms. This exhibitor also won the 1st prize with a beautiful bloom of Glean, the breeder premier prize. Mr. Needham's most noteworthy flowers were George Hayward, Miss Collier, and Sam Barlow (Class A); George Hayward, Chancellor, and Wm. Annibal (Class B); Glean, Miss Barlow, and Rose Hill (Class E). His 1st prize blooms in the classes for single blooms were Dora (bybloemen feathered), George Edward (byb. flamed), Halls (byb. breeder), Miss B. Coutts (rose breeder), Lizzie (rose feathered), Sir J. Paxton (bizarre flamed), Sir J. Paxton (bizarre breeder), and G. Hayward (bizarre feathered).

Mr. J. W. BENTLEY, Middleton, Manchester, won the "Samuel Barlow" Silver-gilt Medal offered for the best pair of Rectified Tulips, 1st prizes for 3 Flamed and 3 Breeder Tulips, and the premier for the best Flamed bloom, with a very fine Chancellor. Showing a grand bloom of A. K. Green, he was 1st in the single bloom Rose Flamed class, and was 2nd in nearly all of the remainder of the chief classes.

In the classes for growers of fewer than 400 blooming bulbs of English Tulips, Mr. A. S. CHATER was the most successful exhibitor.

MESSRS. HOGG AND ROBERTSON, Dublin, were alone in the open class for 20 vases, 7 blooms in each, of garden Tulips, and were awarded the 2nd prize for a decorative display. The chief varieties were Cardinal Manning, Inglescombe Yellow, Apricot, Ellen Willmott, Prince of Orange, and Professeur de Comminet (a particularly good dark, almost black, variety).

LINNEAN.

ANNIVERSARY MEETING.

MAY 24.—The anniversary meeting was held on the 24th ult., Prof. E. B. Poulton, F.R.S., president, in the chair.

The treasurer submitted the annual statement of accounts duly audited, and explained a few points of interest; on the motion of the president the statement was received and adopted.

The general secretary stated that since the last anniversary the deaths of sixteen Fellows have occurred or have been ascertained, also two foreign members and one Associate; eleven Fellows have withdrawn, and four have been removed from the list by the Council, in accordance with the Bye-Laws, Chapter II., Section 6.

Sixteen Fellows have been elected, of whom fifteen have qualified to date, and three foreign members and one Associate have been elected.

The librarian's report showed that the total additions to the library were 475 volumes and 323 pamphlets and separate parts, and that 213 volumes had been bound within the year.

The officers for the new year were appointed as follows:—President, Sir David Prain, C.M.G., F.R.S. Treasurer, Horace W. Monckton, F.G.S. Secretaries, Dr. B. Daydon Jackson, E. S. Goodrich, F.R.S., and Dr. A. B. Rendle, F.R.S.

The Rev. James Marchant, on behalf of the "Alfred Russel Wallace Memorial Fund," presented a bronze cast from the original model by Mr. Albert Bruce-Joy for the medallion recently unveiled in Westminster Abbey to the memory of the late naturalist, together with a copy of his memoir of Dr. Wallace, inscribed with the name of the Linnean Society.

The president then delivered his address, "On the Inheritance of Slight Variations," which was illustrated by specimens and lantern-slides.

The president addressed Mr. Frank Evers Beddard, F.R.S., and recited the services to zoological science which had decided the Council to award the Linnean Medal this year to him. The recipient made a suitable reply.

KEW GUILD.

MAY 24.—The annual general meeting of the members of the Kew Guild was held in the Lecture Room of the Chelsea Physic Gardens on the second day of the Chelsea Show. Mr. A. W. Hill presided over a good attendance. In proposing the adoption of the Committee's report Mr. John Weathers congratulated the members on the general condition of affairs. The report, which was adopted unanimously, records, with

deep regret, the loss by death of Messrs. C. F. Ball, H. J. Loughurst, W. H. Morland, and F. W. Harvey, the three former having fallen in the service of their country. Over 100 members of the Guild are serving with His Majesty's Forces. The committee has subscribed to the Gardeners' Royal Benevolent Institution, and to the Royal Gardeners' Orphan Fund. The usefulness of the Benevolent Fund, which has enabled assistance to be given to needy members, was again brought before the notice of the meeting. On the deaths of Messrs. Ball and Harvey, Messrs. J. W. Besant and H. Cowley were co-opted for the committee, and the vacancies caused by the retirement, as per rule, of four members were filled by the election of Messrs. E. J. Allard, J. W. Campbell, A. D. Cotton, and J. Marks, while Mr. W. Hales was appointed auditor in place of Mr. Allard. It was agreed to send hearty greetings to the unofficial branch of the Guild in America, where a number of "Old Kewites" met on the occasion of the recent great flower show.

The committee had decided that it was not advisable to hold the dinner which usually follows the meeting, but the President for the year, Miss Matilda Smith, entertained the members and various invited guests to tea before the meeting.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

MAY 11.—Committee present: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. C. Cowan, J. Cypher, A. G. Ellwood, J. Evans, P. Foster, A. R. Handley, A. J. Keeling, W. Shackleton, S. Swift, H. Thorp, G. Weatherby, and H. Arthur (secretary).

The following medals were awarded for collections: Silver-gilt Medal to R. ASHWORTH, Esq., Newchurch (gr. Mr. W. Gilden); Large Silver Medal to Messrs. CYPHER AND SONS, Cheltenham; and a Silver Medal to Messrs. SANDER AND SONS, St. Abans.

AWARDS.

FIRST-CLASS CERTIFICATES.

Odontioda Zenobia var. *Ashworthiana*, *Odontoglossum Airworth* var. *Ashworthianum*; *Miltonia eccllaria* var. *Rosendali*, all from R. ASHWORTH, Esq.

Cypripedium gloriosum, *Odontoglossum crispum ranthotus* var. *Snow Queen*, both from TOM WORSLEY, Esq.

Brassia-Laelia Veitchii West Point var., from S. GRATRIX, Esq.

Odontioda Red Cross var. *The Captain* (arden-tissimum × *Cooksoniae*), from P. SMITH, Esq. *Cattleya Apollo* var. *Rhodesia* (B.C. Veitchii × *C. Mendelii*), from H. THORP, Esq.

AWARDS OF MERIT.

Cattleya Mendelii var. *Brightness*, *Odontoglossum crispum Peter Pan*, *O. ranthotus* var. *Madge*, and *Cypripedium Rowena* var. *The Gharke*, all from P. SMITH, Esq.

Odontioda Brewii var. *Rembrandt*, from R. ASHWORTH, Esq.

O. Schroderiana var. *Khaki King*, from T. WORSLEY, Esq.

ANNUAL MEETING.

The annual meeting of members was held at 2.30 p.m., the Rev. J. Crombleholme presiding. The report and balance-sheet were adopted. R. Ashworth, Esq., was re-elected president. The vice-presidents were re-elected, with the addition of Messrs. J. J. Bolton and Wm. Bolton.

The prizes were presented to the successful exhibitors as follows:—Mr. J. J. Bolton's Gold Medal, to TOM WORSLEY, Esq. (Gardener's Prize to Mr. T. Wood); Mr. Bolton's Silver-Gilt Medal, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. W. Gilden); Botanic Society of Manchester's Gold Medal, to R. ASHWORTH, Esq.; Messrs. Charlesworth and Co.'s Obiet d'Art, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. W. Gilden); Mr. A. Hammer's Silver Cup, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. W. Gilden); Messrs. Hassall and Co.'s Silver Cup, to R. ASHWORTH, Esq. (Gardener's Prize to Mr. W. Gilden).

The prizes offered by Mr. A. J. Oakshott were awarded as follows: 1st, Mr. E. ROGERS;

2nd, Mr. C. FINDLOW; 3rd, Mr. W. GILDEN; and those offered by Mr. P. Smith were won by Mr. W. GILDEN (1st), J. LUTTON (2nd), and Mr. J. WOOD (3rd).

Mr. Z. A. Ward's Silver Cup was awarded to R. ASHWORTH, Esq. (Gardener's Prize to Mr. W. Gilden), whilst the Society's Gold Medal offered to Small Amateurs was won by F. A. HINDLEY, Esq.

Obituary.

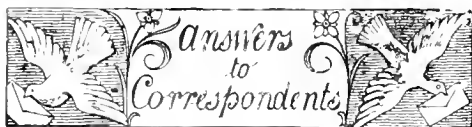
E. NEUBERT.—The death is announced of Emil Neubert, whose name is connected with the Lily-of-the-Valley trade of Hamburg. Deceased, who was 85 years of age, had been in his early years a member of the staff of Dippe Bros., the Quedlinburg seedsmen. About 60 years ago he went to Hamburg, and established the nursery at Wandsbeck.

CHARLES SCOTT.—Mr. Charles Scott, who recently retired from his appointment as gardener at Terraughtie, Kirkcudbrightshire, died at Terraughtie Cottages on the 26th ult. Mr. Scott was for many years in the service of W. J. Herries-Maxwell, Esq., of Munches, while he lived at Terraughtie, and when the mansion was let took charge of the gardens and the general estate work. Mr. Scott was an able gardener, and took special interest in florists' flowers, being one of the most successful local exhibitors of these and other subjects.

GARDENERS IN AMERICA.—We regret to learn from the American horticultural Press, of the deaths of several gardeners in the United States who were natives of this country. Reuben Arnold was a native of Leicester, where he was born in 1844. He emigrated to the United States, and built up a successful florist's business at Milford, Massachusetts. His death took place on March 13. Thomas Burke died on April 26, at the age of 75. He was a native of Ireland, but settled in America at an early age, and became a successful florist at Providence, R.I. David H. Sheehan, whose death occurred on March 16, was for 22 years superintendent of the Public Parks of Brookline, Mass. He was born in Dublin 72 years ago, and took an agricultural course at Dublin College. His career in America was a successful one, most of it being spent in the care of public parks. Andrew McKnight died at the age of 95 in the middle of April. He was born in Scotland, and emigrated to America at the age of twenty. He conducted a florist's business in Jersey City. James MacMachan, for seventeen years superintendent for George F. Baker, at Tuxedo Park, New York, died on April 11. Mr. MacMachan was born in Dundee; at an early age he moved to Blairgowrie, and while very young commenced his gardening career at Hallyburton. In the years following, until he settled in America, he was employed in some of the best estates in Scotland and Ireland. Mr. MacMachan took a leading part in the work of the Tuxedo Horticultural Society, in which society he had held the office of president. He was also a director for several years of the National Association of Gardeners. Mr. Arthur Hammond, the oldest resident of Geneva, New York, died on April 4, at his home in Genesee Street, aged 91 years. Mr. Hammond was born at Heaton, and settled in America in 1858, at Stafford. From there he went to Iowa, and in 1858 returned to Geneva and entered the nursery business. Under the name of Hammond and Willard he conducted one of the largest nursery firms in Geneva.

TRADE NOTE.

We are informed that Mr. Herdman Thomson, who for the past eleven years has been associated with the business of the late Mr. David W. Thomson, nurseryman and seedsmen, Edinburgh, has joined the firm of Messrs. Thomas Methven and Sons, nurserymen and seedsmen, Edinburgh.



AGAVES DYING: *G. W. T.* The Agaves are affected by the disease known as Leaf-blotch (*Coniothyrium concentricum*). Paint the blotches with a solution of liver of sulphur every fourth day: this may possibly effect a cure, but the disease has been neglected, with the result that the spores of the fungus have been washed down to the heart of the plant, making the chances of a complete cure somewhat problematic.

APPLE-GROWING FOR MARKET: *Ron.* (1) For fruit generally the Northern markets are better than the London or Southern markets; but London is perhaps the best for choice dessert Apples. There is good fruit land in most parts of Kent and some parts of Sussex, if you prefer the South. (2) The altitude desirable depends upon that of the surrounding districts. From 100ft. to 300ft. would suffice, unless the surrounding altitudes were much higher. Near the south coast 100ft. would be less exposed to gales than a higher altitude.

BEECH TREE DISEASED: *S. H. T.* It is evident that the tree you describe is attacked by the Beech Coccus. If the pest is confined to the one branch you mention, it can be destroyed by scrubbing the bark with a strong insecticide. If, however, it is found in other parts of the tree, spraying must be resorted to. The best time to spray is when the tree is in a dormant condition. The following is a good recipe:—Paraffin, 2 gallons; soft soap, 1½ lbs.; caustic soda (98 per cent.), 6 lbs.; water, 28 gallons. The soft soap should first be dissolved in a gallon of boiling water; the paraffin should then be added and the mixture thoroughly churned until it becomes a creamy mass. The caustic soda should next be dissolved in the remaining 27 gallons of water, and poured into the paraffin emulsion. The whole should be well mixed, and used immediately. Another recipe which is sometimes found efficacious is sulphate of iron, ½ lb.; lime, ¼ lb.; paraffin (solar distillate), 5 pints; caustic soda (98 per cent.), 2 lb.; and water to make up to 10 gallons. Dissolve the sulphate of iron in 9 gallons of water, slake the lime in a little water, and then add a little more water to form a milky fluid. Pour the lime-water into the sulphate of iron liquid through a piece of coarse sackin., and then add the paraffin, thoroughly churning the mixture. Add the caustic soda in powdered form just before using, and stir well. In using either of these mixtures, care should be taken to protect the hands and face. Besides ridding the tree of the Coccus, the caustic soda will clear it of lichens and algae.

CORRECTION (see p. 286).—The Rhododendron that gained the R.H.S. Award of Merit at Chelsea was named Bagshot Ruby, not Bagshot Beauty, as printed.

CUCUMBERS CURLING: *Daphne.* Improper watering and ventilating are the most frequent causes of the curling of young Cucumbers, but it may result from a check of any kind. If the plants have been subjected to a draught, or the water used for moistening the roots has been too cold, the fruits may curl; even excessive watering, when the roots have become too dry, sometimes has this effect.

CYCLOPS LEAVES INJURED: *A. W., Headingley.* The leaves of the Cyclamen have been injured by thrips. Syringe the plants thoroughly with tobacco water, or fumigate the house with a nicotine vaporiser. If this is not effective fumigate with hydrocyanic acid gas according to the directions we gave you in the last issue. Once the plants are free from the pest the best preventive is to syringe them every day with clear, soft water.

HOLLY LEAVES WITH LEAF-MINING GRUBS: *W. O.* The leaves of your Holly are attacked by the larvae of the Holly Fly (*Phytomyza ilicis*). The eggs are deposited beneath the epidermis of the leaf, and when the grubs are hatched out they feed on the substance of the leaf.

This causes patches of a light brown colour to appear, the tissue dying. Spraying will not destroy the grubs in the tissue, but the female insect may be prevented from depositing her eggs by spraying once a week until June with a strong solution of soft soap into every four gallons of which half a pint of paraffin has been stirred. All affected leaves should be picked off and burned.

MAGGOTS ON CHERRY: *Maggot.* We cannot identify the maggot without seeing it. Send specimens, packed carefully in a tin, so that they are not crushed, and enclose with them one of the flowers or leaves on which they feed.

NAMES OF PLANTS: *P. S. Edwards.* 1. Suckers of *Circaea lutetiana*; 2. *Potentilla reptans*. Neither is poisonous nor injurious to poultry. —*W. Lilcock.* *Tecoma australis*.—*H. A. M.* The corms appear to be those of a *Crocus* species, probably *C. Scharojanii*. It is, however, difficult to determine what the plant is from corms alone and without information as to where it was collected. —*W. E. T.* The specimen was packed too wet, and was so decayed as to be unrecognisable. Send another, in a drier condition. —*W. S.* *Tecoma australis*, sometimes known as *Pandorea australis*, a member of the Nat. Ord. Bignoniaceae. The plant is known in Australia as the Wonga-Wonga Vine. Its synonyms are *T. diversifolia* and *Bignonia Pandorea*. Under this latter name the plant is illustrated in *Bot. Mag.*, tab. 865.

NARCISSUS BULBS DYING: *Fenep.* None of the bulbs contained larvae of either the Merodon or *Eumerus strigatus* flies, neither was there any evidence of the previous existence of larvae therein, although "the peculiar fly" you state to have seen may have been *Eumerus strigatus*. Two of the bulbs suggested an attack of the fungus *Fusarium bulbigenum*; in both cases evidently proceeding from the foliage downwards to the bulbs. The spores which originated these attacks were probably carried to the foliage in 1915, and the resultant mycelium travelled down to the bulb in that year. Hence newly-purchased bulbs, to all outward appearance sound and healthy, may have carried with them the initial stage of a *Fusarium* attack. In the rest of the bulbs there was no perceptible sign of *Fusarium*, certainly nothing to account for the apparently diseased state of the foliage, and it would seem possible that their failure has to be accounted for in some way other than flies or *Fusarium*. The roots were very feeble, showing that the cultural conditions were wrong in some respect. As soon as the foliage dies down, lift, clean, and dry all doubtful bulbs. Carefully examine them, and burn at once those found at all soft. Cut open a few healthy bulbs to see if *Fusarium* can be detected, for this will be a guide to the general treatment of the stock. Catch the small flies seen about the plants by hand-nets. From about 7 to 7.30 p.m. the flies become sleepy and may quite easily be caught in the foliage with a small pair of hand-nets made of thin black muslin, placing one under and one over the fly as it rests on the foliage.

PEACHES DROPPING: *T. J. N.* As you will see from the correspondence on this subject (pp. 273, 300), failures with Peaches and Nectarines this season are common.

ROSE ELISA ROBINSON CANKERED: *G. W. T.* The Rose you send is attacked by an affection which is known as "Rose canker," but is of a purely physiological nature, and has nothing to do with the fungus also known as "Rose canker," which is called *Coniothyrium Fuckelii*. Remove the diseased patches as soon as they appear.

STRAWBERRIES BEARING TOO SOON: *S. J.* The best way to prevent your Strawberries St. Antoine de Padoue from bearing too soon is to pick off the flowers as soon as they appear, until the proper time arrives.

TOMATOS DISEASED: *Old Subscriber.* The plants are attacked by Tomato leaf-rust (*Cladosporium fulvum*). Spray the plants every fourth day with a solution of liver of sulphur

(one ounce of sulphur in four gallons of water). Attend carefully to the ventilation of the house, which should be free and ample, and pick off and burn the diseased portions of the plants as they appear.

TOMATOS FAILING TO COLOUR: *C. H. H.* The condition of your Tomatos is a familiar one to most growers. It is not caused by any disease, but may be due to a lack of potash in the soil. You should apply sulphate of potash to the roots (not kaint).

TOMATOS WITHERED: *F. E. S.* The beetle you sent is a click beetle, which produces the wire-worm. It is not possible to ascertain with certainty what is causing the damage to the Tomato leaves, as the plant was completely withered. Send another specimen in a tin, slightly moist. With regard to the woodlice the best way to trap these is to hollow out a Potato, and leave it beneath the plants, hollow side downwards. The insects will enter the Potato, and can then be shaken out into a basin of strong insecticide.

VINE LEAVES AFFECTED: *Reader and J. T.* There is no disease on the leaves sent for examination. The injury is due to scorching by the sun's rays when the leaves were damp. Ventilate the house early in the day, so that by the time the sun has assumed its full strength the foliage will be perfectly dry. Probably a little more shading than you have hitherto provided, during the hottest part of the day, will also be beneficial.

VINE LEAVES BLISTERED: *A. W., Headingley.* Unsuitable atmospheric conditions in the vinery have produced the excrescences, or "sap-warts" on the leaves. The house must have been kept too moist, and not sufficiently ventilated, and probably also there has not been enough shading on bright days. If you restore more normal conditions, attend carefully to ventilation and shade the vines from bright sunshine you will probably find that the trouble will gradually disappear.

VINES IN NEW HOUSE: *L. L.* Your house will take nine vines at nearly four feet apart and two feet from the ends. The best black Grape of easy culture is Black Hamburgh, and you should plant the greater number of that variety. Black Alicante is a late keeping Grape, and easy to grow; a third is Gros Maroc. Two and a half feet is ample depth for the border, and the surface should be nine inches below the woodwork. Nine cart-loads of loam will be required, and to this should be added one load of mortar from an old building, half a load of wood ashes or burnt vegetable refuse, and two hundred-weight of steamed bone flour. If there is a good quantity of grass or roots of grass in the loam no stable manure will be required; otherwise three or four bushels of that material, half decayed, may be added.

WEEDS IN PONDS: *W. H. P.* One method of the removal of weeds from a pond is simply by using a scythe, and if the pond in question is already drained this will be simple. Small weeds, however, are best removed by chemical means, and this operation can be done most easily when the pond is full. To every 100,000 gallons of water in the pond take one pound of copper sulphate. The amount of water in the pond can be ascertained by multiplying together the average length, breadth, and depth in feet, and multiplying the result by 6½, the approximate number of gallons in a cubic foot. Break up the copper sulphate, and enclose it in a bag of loose texture. Tie it behind a boat, and then draw it backwards and forwards through the water in parallel paths ten or twenty feet apart. The copper sulphate will become dissolved, and will kill the weeds, which will die down. The sulphate is very little, if at all, injurious to fish, and in any case it will disappear from the water a short time after application.

Communications Received.—*W. F., J. K., T. L., M. E. T., T. W. B., Silver Leaf,* C. H. A. G. A.—*G. T. G., Paris.*—*E. W. G., A. W. H. J., C. H., J. A. P., A. B. J., G. J. F., T. S., P. S. W., R. P. B., S. A., J. R. J.*

THE Gardeners' Chronicle

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AQUATIC COMPOSITAE.

IT is generally considered that the seed-bearing plants living in water at the present day are not the direct progeny of aquatic ancestors, but that they have descended from terrestrial forms, for the seed-bearing character could scarcely have been directly acquired in the water. As all life is supposed to have originated in water, these terrestrial ancestors were no doubt themselves the posterity of aquatic forms, which through gradual evolution during a vast period of time have produced the flowering plants of the present period. The seed-plant, then, speaking in a truly geological sense, is a comparatively recent production, and is most highly adapted to present conditions. In the constant struggle for existence many races of plants have in all probability been entirely exterminated, their places having been taken by better-equipped rivals. On the other hand, some, such as aquatic flowering plants, have escaped destruction by taking to the water. The oldest representatives of these—*Elodea*, *Lemna*, and *Ceratophyllum*—have changed much in their internal structure; whilst others with a shorter aquatic record have as yet been little modified internally, if at all.

The vast and extremely natural family, Compositae, is regarded as being at the top of the tree in plant evolution. Its highly specialised inflorescence, consisting of numerous flowers surrounded by an involucre of bracts, secures the pollination of several flowers by the single visit of an insect. The calyx (pappus), no longer a protective envelope, as is its function in most other families, is mostly highly modified for the effective dissemination of the fruit. Compositae are therefore well provided for in holding their own against competitors, which they are more likely to drive out than to be themselves compelled to seek new habitats. It is therefore only in the more primitive groups of the family, longer subject to the struggle for existence, and showing evidence of reduction, that aquatic species would be likely to occur. But first of all it is necessary to indicate these older groups, and to consider the characters which might safely be regarded as of a

primitive nature. They are as follows:—(1) foliaceous involucre of bracts; (2) scaly or bracteate conical or elongated receptacles; (3) foliaceous or little modified calyx (pappus) or reduction of the same; (4) free, or more or less free, anthers. Feature No. 1 would most resemble

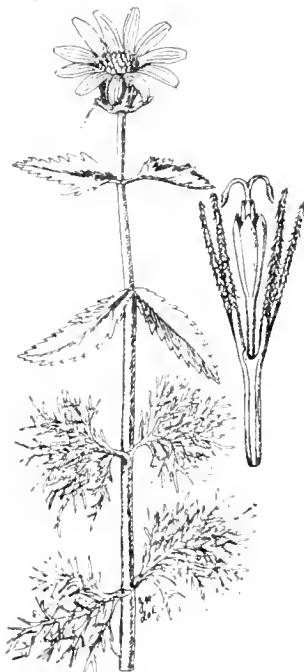


FIG. 129.—*BIDENS BECKII*: DISC FLOWER MUCH ENLARGED, SHOWING THE BRISTLES OF THE PAPPUS WITH REFLEXED HAIRS.

the bracts which are present in the families from which the Compositae are supposed to have descended; for example, Campanulaceae; No. 2 would be similar to the ordinary spicate inflorescence with its subtending floral bracteoles; No. 3 would again resemble flowering plants of a somewhat lower grade, and, regard-

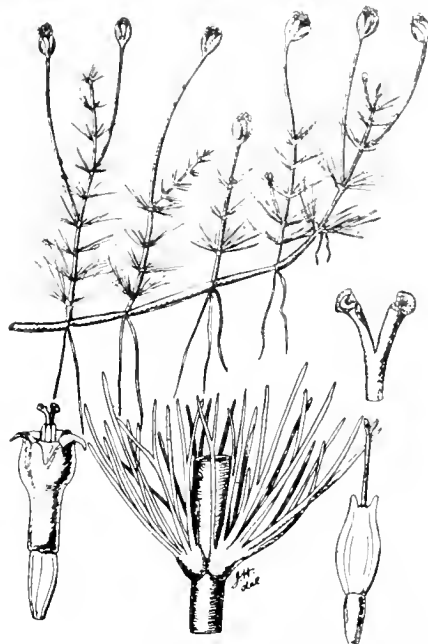


FIG. 130.—*COTULA MYRIOPHYLLOIDES*: A SPECIES WITH OPPOSITE, MUCH-DIVIDED LEAVES AND DISCOID FLOWER-HEADS.

ing No. 4, free anthers are certainly more primitive than connate ones, the latter being highly specialised for the conservation and protection of the pollen.

One of the remarkably few truly aquatic Compositae is *Bidens Beckii**, a native of quiet

lakes of New York State and Canada. *Bidens* is a large genus belonging to the tribe Helianthoideae, which is no doubt the most primitive tribe of the family, for in it every one of the above-mentioned characters is found. The foliaceous bracts are almost universal throughout the tribe (cf. *Helianthus*, *Dahlia*, *Coreopsis* etc.), whilst the elongated or conical receptacle is present in the familiar *Rudbeckia*, and in other genera; the calyx (pappus) is very frequently scale-like or coronate, or sometimes, owing to reduction, entirely wanting; and the anthers are wholly or nearly free from one another in one subtribe, the Ambrosiinae, which is moreover dioecious, another primitive feature. Although *Bidens* belongs to the primitive tribe Helianthoideae, it is somewhat surprising to find in it a so highly modified aquatic species (see fig. 129) as *B. Beckii*, for *Bidens* is at the present day a widely-dispersed and progressive genus well adapted by means of its barb-like pappus for distribution by animals. Its headquarters, as those of most of the Helianthoideae, are in Central and North America. The pappus consists usually of a few or a pair of rigid setae, which are furnished with reflexed hairs sometimes resembling the head of an arrow, with which it clings to passing animals. *Bidens pilosa*, a common tropical and sub-tropical weed, is a well known example familiar to most travellers as a painful nuisance to the ankles and the lower part of the legs. A second species, *Bidens cernua*, a native of Britain, inhabits wet ditches and marshes, and is somewhat of a transition between a terrestrial and an aquatic plant.

A second Aquatic Composite, *Cotula myriophylloides*† (see fig. 130) is a native of South Africa, and seems to be confined to the Cape Peninsula. The leaves are opposite, and very deeply and finely divided. The heads are discoid, as in the other species of the genus, and the flowers, especially the female, are much reduced. There is no pappus. *Cotula* belongs to the tribe Anthemideae, a near ally of the Helianthoideae, with a similarly reduced or paleaceous pappus. A few of the other species of this genus, for example, *Cotula coronopifolia*, grow in damp wet places.

Another very interesting aquatic is *Pectis aquatica* (see fig. 151), a native of Pine Plains at the base of the Sierra Madre, Chihuahua, Mexico, where it was discovered by C. G. Pringle (No. 1,296) in September, 1887. It grows in shallow water, the floating stems being sometimes as much as a foot long, and sparingly leafy and branched at the top. *Pectis* is a genus of about fifty species, all natives of the warmer parts of America. It is a member of the tribe Helianthoideae, a very near ally of the Helianthoideae. As may be seen from the figure the pappus of *P. aquatica* is much reduced and resembles a tuft of hairs, and has probably entirely lost its function of assisting in the distribution of the achene.

A fourth and extremely interesting aquatic Composite is a species of *Erigeron*, *E. heteromorphus*‡ (see fig. 152), from Mexico, also discovered by Pringle (No. 3,675). He found the plant growing on calcareous tufa, more or less submerged, in the cascades of the Concepcion River near Micos, San Luis Potosi, Mexico, in December, 1891. It is remarkable in having the upper leaves entire or toothed, whilst the lower submerged ones are long and thread-like.

These aquatic Compositae would be interesting plants for growing in tanks of water in warm houses in this country. *Bidens Beckii* would be best suited for out of doors, considering the cold winter climate of its habitat. There may be a few more species of Compositae of similar habit, but the above-mentioned are the only ones known to me at present. J. Hutchinson, Kew.

* Hary, in *Hook. Ic. Pl. t. CCXXXV.*

† S. Watson in *Proc. Am. Acad.*, XXIII, 279 (1888).

‡ Robinson in *Proc. Am. Acad.*, XXVII, 173 (1893).

• Torrey in *Spring. New Entdeck.*, II, 135 (1821).

THE MARKET FRUIT GARDEN.

RAIN fell in my district on ten out of the first fourteen days of May, after which the weather was dry, sunny, and warm, only one more measurable rain having occurred up to the end of the month. The total rainfall was 2.07 in. There was a frost of 2° on the night of the 9th, and no other beyond a white frost or two, which did not reduce the thermometers 4ft. from the ground to freezing point. The frost of 2° was not sufficient to affect in the slightest visible degree the petals of Plums or Apples in blossom. The dry and sunny period was of great value for the destruction of weeds in the orchards, which were unusually thick and rampant at the beginning of the hoeing season. More good was done in the last fortnight of May than had been achieved in all the preceding time of hoeing.

THE SETTING OF FRUIT.

In my last notes it was stated that the apparently successful setting of Plums was not to be taken as an assured success. Unfortunately, this warning has proved only too appropriate in reference to the earliest blossoms. There was the greatest show of blossom on my Monarchs that has ever been seen, and there is one of the smallest settings of fruit. As was the case last season, the great majority of fruitlets failed to swell, and are dropping off. President, Black Diamond, and Greengage, which blossomed fairly, are complete failures. Mature trees of Early Rivers, which blossomed profusely, have set a good crop, although at least nine out of ten of the fruitlets failed to swell; but on young trees, planted four to eight years ago, only a sprinkling of fruit is left. Czar has a full crop, the dropping of multitudes of its enormously superabundant fruitlets being an advantage. Victoria has set a good crop, but Pond's Seedling only a thin one. The failure of the varieties that have proved disappointing may be attributed to lack of pollination, the weather having been too wet and cold for bees and other insects to work properly when the trees were in blossom.

The crop of Apples will be extremely small, at least, if the appearance of orchards in the country generally is at all like that of mine and of others that I have seen or heard of. As stated previously, many varieties failed almost entirely to blossom. From these, of course, nothing was expected. The grievous disappointment comes in with respect to those which blossomed well or fairly, from most of which whole trusses have withered almost entirely, even where they were not destroyed by brown rot, to be referred to presently. The only varieties that have set a good quantity of fruit are mature trees of Beauty of Bath, Charles Ross, Mr. Gladstone, Allington Pippin, Early Julyan, Blenheim Pippin, Golden Spire, Lord Grosvenor, and Royal Jubilee. From trees of most of these varieties only ten years or less from the planting, nearly all the trusses of blossom have dropped without setting a fruit. Warner's King and Lord Derby, which promised well, have set only passable crops, and even this is almost too much to say of Bramley's Seedling or Bismarck. Even the usually faithful Worcester Pearmain has proved disappointing. From three acres of Cox's Orange Pippin there will not be fruit equal to a fair crop on half an acre. In my Apple orchards, as a whole, there cannot be one-tenth of what may be regarded as an average yield in relation to the ages of the trees.

What are the causes of this lamentable failure? So far as it is due to lack of blossoming it may be attributed mainly, I think, to the setting of a great crop generally last year, which was half ruined by the aphid, and to the great strain

which that pest exerted on the trees by destroying the foliage. Possibly the latter also helped to prevent the setting of blossom on varieties which blossomed well or fairly, in addition to which there was the wet and cold weather which prevailed while most varieties were in full bloom.



FIG. 131.—PECTIS AQUATICA: A NATIVE OF MEXICO; STEMS UP TO ONE FOOT LONG, FLOATING IN WATER.

(See p. 305.)

DEVASTATING ATTACKS OF BROWN ROT.

By far the most extensive attack of brown rot on Apples that I have ever seen has occurred this season. This worst of all fungous diseases in my orchards, excepting in those planted eight years or less, not yet affected by it materially, attacks mainly the fruit spurs and their blossom trusses. Evidence as to whether it attacks the

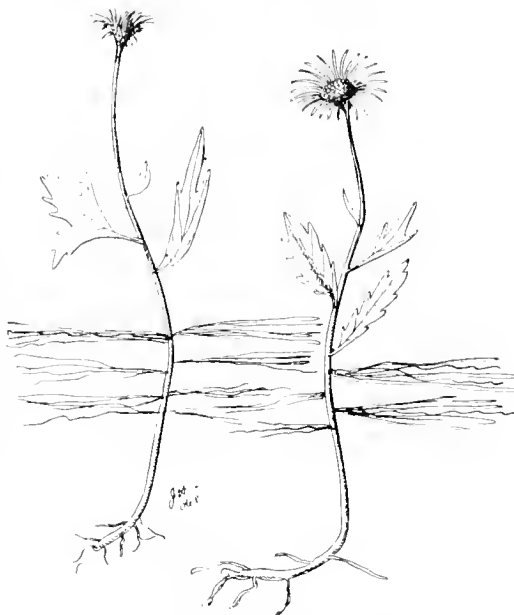


FIG. 132.—ERIGERON HETEROMORPHUS: AN AQUATIC SPECIES, NATIVE OF MEXICO; LOWER LEAVES THREAD-LIKE AND FLOATING.

(See p. 305.)

spurs before they blossom, or afterwards, is conflicting. Some of the spurs on which the trusses of blossom have been entirely destroyed by the fungus are rotten down to where they join the branches, and it seems unlikely that there has been time for the spread of the disease from the blossom to the bases of the spurs. On

the other hand, the rot on many spurs does not extend to their juncture with the branches, and this favours the assumption that the attack starts on the trusses of blossom. At least three-fourths of the trusses on Domino and Bismarck, which promised great crops, have been destroyed by the disease; and nearly as large a proportion on Lord Derby and on those mature trees of Cox's Orange Pippin which blossomed well. Fearn's Pippin, growing next to Cox's, is even worse affected, nearly every truss on one large tree having been destroyed by the fungus. Early Julyan, growing next to Domino in one case, and to Cox's Orange Pippin in another, is also a sufferer to a considerable extent, and so is Warner's King. Other varieties attacked more or less are Worcester Pearmain, Allington Pippin, Lord Grosvenor, Duchess of Oldenberg, and James Grieve. The few trees of Lane's Prince Albert which bore any blossom are also sufferers. That the disease spreads rapidly there seems to be no doubt. All the diseased spurs ought to be cut off promptly and burnt; but to deal with hundreds of thousands of spurs is quite impracticable in the present season. The great prevalence of the disease is probably due to two extremely wet winters and springs in succession. It was bad last year, but not nearly so extensive as it is this season. Possibly the use of lime instead of lime-sulphur as usual in my winter spraying is in part accountable for the extensiveness of the attack, the latter being a good fungicide, while the former is not. Curiously enough, there is less brown rot on Plums than has troubled me in some previous seasons, though there is a good deal on Gisborne and President, and some on Czar and Victoria. An important point is the necessity of cutting off every diseased spur and shoot in the first season of attack, when the work is practicable, and burning the cuttings. This course will be adopted in some comparatively young orchards not yet attacked.

POWDERY MILDEW OF THE APPLE.

This fungous disease also is much more than usually prevalent, nearly all varieties of Apples being more or less attacked by it. The disease can be kept in control by cutting off and burning diseased shoots, and spraying twice in a season with lime-sulphur or Bordeaux mixture.

CATERPILLARS.

By way of disagreeable compensation for almost complete immunity from aphid attacks, there is one of the worst infestations by leaf-eating caterpillars, mainly those of the Winter Moth, that I have ever seen. Many varieties of Apples have been sprayed with arsenate of lead; but it appears that birds have cleared off a great number of the pests from trees that have not been sprayed. In some orchards, a report states, many trees have been almost stripped of leaves by the caterpillars.

TOP-GRAFTED APPLES.

The recent drought has not been propitious to the growth of scions on top-grafted trees. Few of them have withered, but many have failed to break at present. Silver leaf shows on some trees that were grafted last year, particularly where the stock is Duchess of Oldenberg, a bad variety for grafting. On Irish Peach and Gascoyne's Scarlet Seedling the success is much better.

APPLE LEAVES SCORCHED BY LIME-WASH.

On p. 274, Mr. E. Beckett, in reference to the scorching of young leaves on Apple trees by lime-wash, reported in last month's notes, expresses the suspicion that lime of too great a strength, or of an inferior quality, must have been used. As a matter of fact, the

better the lime the stronger it is, and that which I used was the best Buxton spraying lime. The quantity used varied from 1½ cwt. to 2 cwt. per 100 gallons, and it was the smaller quantity which was used on the scorched trees. The wash was applied immediately after slaking, in order to have it as nearly hot as possible, in accordance with the usual instructions. After the scorching, cold wash of the same thickness was used, and this did not scorch at all. Three weeks after the scorching hardly any trace of the damage was noticeable, as fresh leaves had formed; but scorching must do harm, however well the trees may recover from the damage. As to the grower referred to by Mr. Beckett, who sprayed Apples when in full blossom, he may have had good crops in spite of his rashness; but nothing will convince me that it is otherwise than harmful to cover the sexual parts of blossoms with lime, even if it be cold. *Southern Grower.*

R.H.S. RED CROSS SALE.

REVIEW OF CATALOGUE.

I.—ORCHIDS.

THE Orchids include a large and varied selection, in which all classes of growers—the enthusiastic amateur, the owner of a large and complete collection, the seeker after new hybrids, and the lover of rare species of botanical value—will find things of especial interest.

Lieut.-Colonel Sir George and Lady Holford have presented a superb collection, in which every plant is of the highest quality. The collection includes *Brasso-Cattleya* The King, the handsome plant which secured a First-class Certificate at the Royal International Exhibition in 1912; *Cymbidium Parishii Sanderæ* (see fig. 133), the rarest and most beautiful of its class; *Cattleya Trianae* Imperator; *C. T. Mooreana*; and some of the fine *Miltonias* for which the Westonbirt collection is famous.

Sir Jeremiah Colman presents an admirable selection of good plants. His contribution is especially rich in *Odontoglossums*, among which are *O. Rouge Dragon*, *O. crispum* Rosy Queen, and *O. King George V.* He is also sending the handsome *Zygopetalum Roeblingianum* (which gained a First-class Certificate, September 15, 1903), and *Laelia anceps waddoniensis*, generally admitted to be the finest white form of its class, which obtained a First-class Certificate in 1889. The collection will also include some of the fine hybrid *Odontiodas*, *Odontoglossums*, and *Dendrobiums* which are to be seen at Gatton in such perfection.

Mrs. Norman Cookson presents a choice collection, which includes the handsome *Odontoglossum crispum* Millicent, one of the finest *Odontoglossums* exhibited at the recent Chelsea Show; *O. crispum* Franz Masereel and *O. c. Leonard Perfect* (see fig. 135), two famous blotched varieties; a good selection of the Oakwood hybrid *Laelio-Cattleyas*; and *Odontioda Bradshawiae* Cookson's variety. Mr. Clive Cookson has added to the collection some fine *Cypripediums*.

Mr. Frederick J. Hanbury is presenting a collection of hybrid *Cattleyas*, *Cypripediums*, and *Cymbidiums*; and Mr. and Mrs. S. Gratrix a fine and varied collection of white and blotched forms of *Odontoglossum crispum*, *Cypripedium Leeanum*, and *C. insigne*; Mr. E. R. Ashton and Mr. W. G. Groves, a number of very interesting plants; Mr. G. F. Moore a collection of good *Cypripediums*, including the famous *C. Thalia*; and Mr. Leopold de Rothschild, Mrs. Francis Wellesley, and other amateurs contribute a number of good plants.

Sir Frederick Moore, of the Royal Botanic Gardens, Dublin, includes in his contribution the

rare *Bulbophyllum dichromum*, *Cirrhopetalum longissimum*, and *Nemoorea irrorata*, all of which will be coveted by collectors.

Beside these valuable and generous gifts from private collectors, the members of the trade have responded most readily and generously to the call for aid. Messrs. Charlesworth and Co. are contributing a collection which includes *Odontioda* Red Cross, *Odontoglossum crispum* Queen Empress, and *O. c. xanthotes*. Messrs. Jas. Cypher and Sons are sending *Cypripediums*, *Laelia purpurata* Emperor, and white *Laelia anceps*; Messrs. Flory and Black are giving some good hybrids, including their fine *Odontioda Irene* var. *Glorita*, for which they recently gained an Award of Merit; Messrs. J. and V. McBean contribute a number of interesting plants, chiefly white; Messrs. Mansell and Hatcher are giving first-rate *Cattleyas*, *Cypripediums*, and *Odontiodas*, and Messrs. Armstrong and Brown are also contributing to the sale.

first stand much air without flagging. The neglect of this airing is frequently the cause of damping, whereby cuttings may be lost. In very drying weather a light spraying of the cuttings is a good thing. This, however, must only be resorted to when there has been no accumulation of moisture on the glass for several days and the cuttings seem inclined to flag. The spraying may be done either with a syringe or a can with a fine rose. If the cuttings were well watered in at the time of inserting them no further watering is necessary, beyond the light spraying, until they are rooted. After a period of from a fortnight to three weeks the cuttings should be callused—that is to say, the lumpy growth around the base of the cutting, which is the first stage of the rooting process, will have formed. The cuttings soon show when this has taken place by their freshness and growing appearance. More air should now be given by propping up the lights at the back, only an inch or so at first,



FIG. 133.—ORCHIDS PRESENTED FOR THE R.H.S. RED CROSS SALE: *CYMBIDIUM PARISHII SANDERÆ*.

PENTSTEMONS: THEIR VALUE IN THE GARDEN.

(Concluded from page 277.)

GENERAL MANAGEMENT WHILE IN FRAMES.

CUTTINGS inserted in frames as described on pp. 277-8 must be shaded from sunshine to prevent flagging. Shading may consist of ordinary garden mats or other material sufficient to break the power of the sun's rays, and prevent the frames from becoming heated, the latter being kept at first closed. Shading should be done as soon as the sun is on the frames in the morning, removing the material as soon as the sun is off them later in the day, in order to give all possible light. The air in the frames may be kept fresh and excess of moisture allowed to escape by drawing the lights off in the early morning, provided there are no high winds. On some mornings there will be moisture on the inside of the glass, and most of this will dry off in from a quarter to half an hour. It is not well to leave the lights off longer, as the cuttings will not at

however. At the same time commence to reduce the shading by allowing the sun to shine on the frames for a time morning and afternoon. The sun will by this time have lost much of its power, but it will still be advisable, on most days, to shade during the brightest part of the day. This gradual inuring of the plants to sun and air is continued until they will stand all the sunshine and plenty of air without flagging, which they will do in a week or two. When this stage is reached the lights should be drawn off on all favourable occasions, in order to keep the plants from becoming weak and drawn. The soil should at this time be tested to find out if water is required, and if the soil seems pretty dry a good watering should be given, which will be better at this time than during the cold and dull days later on. But frequently I have not watered at all after the first soaking in of the cuttings until the following spring. As soon as frosty nights occur some mats for protection should be in readiness for use during the night, but they should be removed in the morning as soon as the frost is on the give. Never leave the frames covered longer than necessary, as nothing tends to weaken the

plants so much as keeping them in darkness. The lights should still be removed as often and as soon as possible all through the winter, as *Pentstemons* should never be coddled. The points to remember are: (1) that *Pentstemons*, if grown hardy, can withstand several degrees of frost; (2) the lights should seldom be on when there is no frost or rain; (3) when in position the lights should be kept propped up at the back. During very cutting winds the lights may be kept on, especially should the frames be in an exposed position. They could then be propped up at the side away from the wind. During rain see that the lights are open in such manner as will allow a circulation of air, while excluding the wet. An operation which greatly benefits the plants while in the frames is a light stirring of the surface soil during winter and spring. The stirring merely

planting out, they may be placed in their flowering positions by the middle of April. The weather, of course, must be considered, and also locality to some extent, but these remarks will apply to the greater part of England.

STOPPING OR PINCHING.

During the early spring some of the plants may start into growth earlier than the others and get much taller. These might have the growing point removed, providing it is done some time prior to planting out. Plants which are stopped will produce several strong side shoots, and will be of more bushy habit, but they will also be a little later in flowering than those not so treated. For the latter reason it is not desirable to practise stopping to any great extent, and it should never be done just before planting out. *S. Ishmore*.

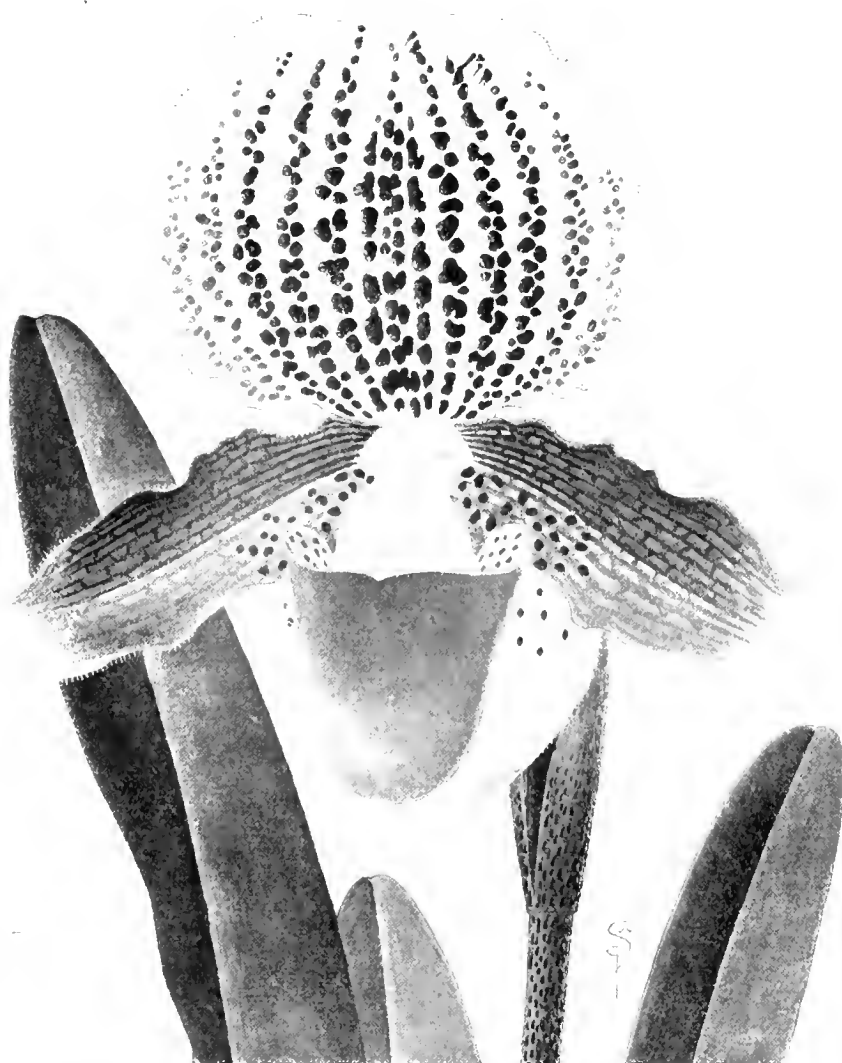


FIG. 154 ORCHIDS FOR THE R.H.S. RED CROSS SALE. *CYPRIPEDIUM THALIA*.

consists of loosening the surface, which has become somewhat close and solid, and is easily done by means of a pointed stick, drawn through the soil amongst the plants. As the days in spring get longer and brighter the plants will show signs of growth, and it is most important that they be kept sturdy, with a view to planting out. Towards the end of March the night coverings may be dispensed with, unless exceptional frosts are still prevalent, and before planting time arrives the lights should be left off all night. *Pentstemons* are often not planted out until May, but if grown in quite cool conditions and exposed gradually previous to

R.H.S. COMMITTEES.—The Council has invited the members of the several committees to visit Wisley in order to inspect both the laboratory, which is approaching completion, and the gardens. It is hoped that the visits of the committees will help to establish close co-operation between the experts who give their services to the work of the several committees and the staff at Wisley. We understand that the following dates are suggested:—Floral Committee, Friday, June 23; Scientific Committee, July 7; Orchid Committee, Monday, July 10; Narcissus and Tulip Committee, Friday, July 14, and the Fruit and Vegetable Committee, Friday, July 21.

The Week's Work.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES.

THYMES.—There are few plants which give a better display of bloom when planted between stepping-stones in a rockery than the many pretty dwarf-flowering *Thymes*. They form a rich carpet when planted on the flat between stepping-stones. All of them are easily propagated by tearing off little pieces, which will invariably have roots attached, and planting the detached portions in a bed of sandy soil, preferably protected by a handlight or frame. Weeds should be pulled out after first loosening the soil, which may be done without disturbing the *Thymes* to any great extent. The *Thymes* I chiefly allude to are *Thymus Serpyllum* and *T. lanuginosus*.

PILLAR ROSES.—Many pillar Roses, such as *Euphrosyne*, *Tea Rambler*, *Tausendschön*, and *Trier* are flowering. In order that the blooms may appear at their best, tie in all growths, which otherwise would be in danger of being broken by winds. The growths should not be tied stiffly.

COTONEASTER THYMIFOLIA.—This fine *Cotoneaster* is useful alike for planting in the front of the shrubbery or in the rock-garden, where it looks well between fairly large stones. It quickly fills the space, and is a pleasing change from Alpines. The plant may be propagated easily from layers; pieces of growth for this purpose, with roots attached, can often be pulled from the old plants.

WATERING.—Plants which have been recently set in beds and borders must not be allowed to suffer from drought. Watering need not be done very frequently, but it is necessary to keep the roots moist until they are re-established. Established plants which are showing signs of exhaustion through root dryness should be watered freely. Watering (except with liquid manure when the purpose is to feed the plants) must be regarded as a necessary evil; it is not a satisfactory substitute for rain.

HOEING.—One of the best ways of saving watering is to keep the soil well hoed; the surface should be stirred for as long as it is possible to work the hoe between the plants. It is a mistake to suppose that hoeing is only needed in the vegetable garden. It is especially valuable between rows of seedling flowers, such as *Sweet Williams* and *Wallflowers*, and also between such plants as *Antirrhinums* and *Pentstemons*, which are already branching freely, and, in many cases, flowering.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

ENDIVE.—Make a sowing of *Endive* for the earliest supplies in rich, deeply-cultivated soil containing sufficient moisture for the roots. If *Endive* is grown on shallow soil and in dry conditions, the leaves are of little value for salads, as they grow tough. Sow the seed in drills made 16 inches apart, subsequently thinning the seedlings to 1 foot apart in the rows. If labour is available the quality of the leaves will be greatly increased by frequent copious applications of water to the roots.

EXHIBITION ONIONS.—Examine the plants frequently, and remove any that are attacked by the Onion maggot; also take precautions against this pest as advised in a previous calendar. These are necessary, for transplanted Onions are not entirely immune from attacks of the maggots. Maintain the stems of the plants in a perfectly upright position, effecting this, if necessary, by supporting them to stakes, or the bulbs will grow deformed. Stir the surface soil between the rows on frequent occasions, taking care that the hoe does not come

into contact with the stems of the plants, as the slightest injury now, although not apparent at the time, may eventually develop into split and damaged bulbs. It is as yet too early to apply stimulants, and in most cases water is not necessary. From now onwards mildew must be sought for, and all affected plants removed and burnt; also, as a precautionary measure, thoroughly spray the plants at regular intervals with water containing soft-soap and sulphur.

SPINACH.—In gardens with moist, favourable soils, continue to make successional sowings of Spinach, but in hot, dry gardens choose New Zealand Spinach and other substitutes. Select the richest and deepest-cultivated ground for Spinach, and for preference where it is partially shaded, such as between rows of tall Peas. Thin the seedlings well apart as soon as they are large enough to handle.

VEGETABLE MARROWS.—Spare plants not required for planting on prepared sites may advantageously be grown in waste ground, and also be utilised for covering trellises or masking manure, leaf-heaps, and other unsightly places. If the soil is poor make large holes, partly fill them with manure, and place on the manure a few inches of soil in which to plant the Marrows.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

DENDROBIUM.—Certain Dendrobiums, including *D. Phalaenopsis* and *D. formosum giganteum*, have completed their resting season, and are starting to grow afresh. Roots will soon appear at the base of the new growths, and at that stage the plants should be re-potted or top-dressed. These Dendrobiums may be grown in ordinary flower-pots or pans. The receptacle should only be just large enough to accommodate the roots, for the plant will succeed best if the compost dries quickly. Use plenty of drainage material. Let the rooting medium consist of *Osmunda* or A1 fibre three parts, and Sphagnum-moss one part, cutting both ingredients into small portions. Only re-pot if the old soil is sour or decayed; top-dressings of fresh material will suffice for the majority of the plants. In re-potting, cut away the dead roots and useless back pseudo-bulbs, arrange the plant in the pot or pan, and make the soil firm about the plant. Grow the plants in a light position in the stove, the warmest Orchid house, or the division devoted to Dendrobiums. Either suspend the plants near to the roof-glass or place them on inverted flower-pots in order that the young growths may have plenty of sunlight. Newly-potted plants should be arranged in a separate batch, and afforded a little extra shade, and care in watering until the roots are re-established. Keep their surroundings moist, and spray them lightly overhead in fine weather. As autumn approaches the flower-scapes will appear, and until these are removed keep the plants supplied liberally with water. After the flowering rest the plants for a long period in a dry house with a night temperature not lower than 55°. Other species requiring attention are *D. densiflorum*, *D. thyrsiflorum*, *D. Farmeri*, *D. pulchellum*, *D. finbriatum*, *D. chrysotoxum*, *D. clavatum*, and *D. moschatum*. All these Orchids may be re-potted in *Osmunda* or A1 fibre directly they are in a fit condition. Their growing season is a comparatively short one, therefore a warm, moist atmosphere is essential, and they must never suffer from dryness at the roots. *D. regium* should be afforded fresh rooting material when growth commences, after which place the plants in a warm house until their pseudo-bulbs are fully developed.

COOL-GROWING DENDROBIUMS.—*D. infundibulum*, and its variety *Jamesianum*, are closely allied to *D. formosum*, but they need a cooler temperature than that plant. Both species are about to start into growth, and the opportunity should be taken to re-pot any plants that require it. In summer grow them in a light position in the intermediate house. Other cool-growing Dendrobiums include *D. japonicum*, *D. Kingianum* with its variety *album*, *D. glomeratum*,

D. speciosum, *D. ochreatum*, and the blue *D. Victoria Regina*. The latter is a charming plant, but is not often seen in a flourishing condition. It thrives best in a Teak-wood basket, with very little soil about the roots, and must never be subjected to long periods of drought.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

GARDENIA.—Gardenias are best planted in a border, for not only are they less trouble than when grown in pots, but they produce more flowers and of finer quality. They should be grown in a low house, where they will be near to the roof-glass. Plenty of heat and moisture are necessary during the growing season, and when roots are plentiful they should be fed liberally with stimulants.

VIOLETS.—The weather of the past few weeks has not been favourable for Violets which were planted out in April, and it has been necessary to spray them freely late in the afternoon of most days. A long spell of dry weather is almost sure to be followed by an attack of red spider on Violets, but a thorough spraying with an insecticide once a week will hold the pest in check. Work the hoe freely between the plants, and remove all runners as they appear. Frequent light dustings with well-seasoned soot previous to hoeing will promote healthy growth.

ANNUALS.—The conservatory and greenhouse may be kept gay at little expense during the summer by annuals in pots. Aster, *Browallia*, *Godetia*, *Petunia*, *Phlox Drummondii*, *Lobelia tenuior*, Ten Week Stock, Annual Larkspur, and *Statice* are all suitable for the purpose. The plants are not very particular as to soil, but a rich compost is to be recommended, for in such soil the plants give a longer season of flowering.

ECONOMY IN FUEL.—Much fuel may be saved by careful management. Fire-heat is used in glasshouses during the summer chiefly to dispel condensed moisture during the night. Therefore if the hot-water system is not employed other means must be taken to keep the atmosphere dry. Much less damping must be done during the day, and, after closing the houses in the afternoon for the purpose of making the best use of solar heat, the ventilators should be again opened a little at about 6 p.m., and no more damping done after that time. By this means the fires may be dispensed with in the summer months unless the weather is very unpropitious. These remarks apply only to glasshouses containing plants in active growth.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

CHERRIES.—Keep the house in which ripe Cherries are hanging dry and cool. A long succession of fruits may be obtained from one house if the earliest varieties are grown in pots, to be removed from the house as soon as the fruit is ripe. The later varieties of *Bigarreau* and *Elton* should have borders to themselves; they can then be well watered and otherwise attended to properly. Bear in mind that the ripening fruits will crack if an excess of moisture be allowed, and that cracking is as bad a defect as shrivelling from drought.

PINES.—More Pines generally ripen in June than are required for use, but if some of the plants on which the fruits are half-coloured are removed to a cooler house, the ripening of the fruits will be retarded, and their colour improved. The house or pit containing plants with ripening fruits may be ventilated more freely and kept drier than would be judicious if the plants were swelling their fruits. Let the soil at the roots be moist, but not saturated.

SUCCESSIONAL PINES.—The fruits of the second batch of plants are swelling rapidly, and the roots require liberal supplies of diluted liquid manure and other stimulants. Damp the surface of the beds and paths, and moisten hot, dry

corners with water warmed to 85°. In syringing or gently dewing the plants overhead see that moisture does not lodge in the crowns. The temperature may be allowed to reach 95° for a time after closing the house; on mild, warm nights it should be maintained at 75°. Admit a little air by the top ventilators after 7 p.m., and allow the aperture to remain open during the night, but close it early the next morning when damping is done.

LATE PINES.—Late plants should be grown in a temperature 5° to 10° lower than is desirable for those in fruit, and they should be shaded lightly during the hottest part of the day. Keep the roots moist, and promote plenty of atmospheric moisture by damping and syringing, as recommended for the older plants. See that the water-pipes are comparatively cool by the time the sun attains full power, or air will be needed, and opening the ventilators results in loss of moisture. Let suckers have similar treatment, with rather more bottom heat to induce the plants to root freely. See that the roots do not become dry, and re-pot the plants when they have almost filled the pots with roots rather than run the risk of their receiving a check, which often causes growth to start prematurely later, rendering the suckers worthless.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOLE, Eastwell Park, Kent.

STRAWBERRIES.—If not already finished, complete the strawing down of the main crop and late-fruited Strawberry beds. Select a dry day and hoe the beds over thoroughly before laying down the straw, or the weeds will get through, and give trouble. With respect to plants on warm borders, required for early fruiting, it is well to thin the blooms early in order to concentrate the whole energies of the plant on the first fruit. The small, late fruits are of little value, as they come in just as the main beds are at their best.

CORDON PEARS.—The numerous side growths on Cordon Pear trees should be stopped—pinching them back to the fourth or fifth leaf. If the tree has not yet reached the height of the wall, allow the leader to remain its full length for the present. In stopping the young shoots of fruit trees it is not advisable to pinch the whole of them at one operation; the top part of the tree should be done first and the remaining portion a day or two later. To obtain fruits of the best quality thin them to a moderate number, and where they have set freely commence thinning as soon as it can be seen which fruits are swelling best, but remember that usually a large number of Pears drop in the early stages, and for this reason it is advisable not to be hasty with the final thinning. The number of fruits left must be regulated by the age and condition of the tree, and also the size of the fruit produced by the variety. Certain of the smaller early sorts, such as *Doyenne d'Été* and *Citron des Carmes*, may be allowed to carry a larger number of fruits than is advisable as a general rule, for the trees of these varieties are relieved of their fruits early in the season. Varieties such as *Doyenné du Comice*, *Louise Bonne of Jersey*, *Pitmaston Duchess*, and *Marie Louise*, should be thinned freely. Amongst the earlier varieties the *Jargonelle* is an old favourite, and with *Williams' Bon Chrétien*, *Clapp's Favourite*, and *Fondante d'Automne* makes a quartette of excellent Pears, ripening in August and September. *Marguerite Marillat*, *Mme. Treve*, *Souvenir du Congrès* and *Triomphe de Vienne*, are all choice varieties suitable for early exhibitions. If the fruits are required for exhibiting the trees must be carefully watered, especially if the soil is of a light, dry nature. Watering should be done systematically, according to the weather, first sprinkling the soil with a concentrated fruit manure, and covering it after the water is applied with a mulch of short manure. In dealing with other trained Pear trees, train in shoots required for extension and stop the remainder as recommended above. In this neighbourhood Pears will be a thin crop.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the PUBLISHER, 41, Wellington Street, Covent Garden, W.C.
 Editors and Publisher. — Our Correspondents would oblige by delaying in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY, JUNE 12—
 United Hort. Ben. and Prov. Soc. Coms. meet.
 WEDNESDAY, JUNE 14—
 Sheffield Chrys. Soc. meet.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58.2°.

ACTUAL TEMPERATURE:—
 Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London, Thursday, June 8 (10 a.m.): Bar. 29.5°; temp. 59.5°. Weather—Bright sunshine.

SALES FOR THE ENSUING WEEK.

THURSDAY—
 Ferns, Pelargoniums and Marguerites, at 12, by Protheroe and Morris, at Messrs. Wm. Whiteley's Nurseries, Hillingdon Heath, Middlesex.

The Manufacture of Plant Food.

The exact series of processes whereby the green plant manufactures its food, in the form of sugar, from the raw materials, carbon-dioxide and water, is a subject which is continually engaging the attention of botanists. In spite of the vast amount of work which has been done, the details of this assimilation process are still uncertain. It is held by many that sunlight acting on the green leaf brings about the formation of formaldehyde, and that the formaldehyde so produced is condensed to form a sugar. It has been claimed, on the one hand, in support of this hypothesis that formaldehyde may be detected in the green leaf exposed to light. On the other hand, competent observers maintain that the aldehyde so detected is not the simple formaldehyde H.COII, but a more complex member of this chemical class, and, further, it is urged that there is no convincing evidence that the aldehyde which makes its appearance in the green leaf is an antecedent of the sugar which is produced therein. Many attempts have been made to bring about the synthesis of sugar by artificial means, and thus to throw light on the probable course of events in the green plant. The most recent of these attempts has been made by Mr. H. A. Spöchr, and he has published the results.*

This investigator has confirmed the conclusion reached in previous researches that it is possible to produce formic acid by subjecting solutions of carbon-dioxide or potassium bicarbonate to the ultra-violet light from a quartz mercury-vapour lamp. He was unable, however, to confirm the claim made by others that formaldehyde is also produced by these means. Mr. Spöchr, however, finds that by the continued action of sunlight or ultra-violet light on the formic

acid a sugar-like substance is produced. This substance, obtained in the form of a syrup, has many of the properties of sugar, and reacts to various reagents in a similar manner. The lowest green plants, the algae, are able to use this sugary substance as food, and if such plants are kept in the dark and supplied with it they live and grow. Not only is this sugar-like substance produced by the action of light, but it is also readily decomposed by light, and hence when the experiment is carried out in test-tubes the yield is always low. Needless to say, the subject is one of the highest importance, not only to the botanist, but also to mankind at large; for once the secret of the manufacture of sugar by the green-plant is discovered, the laboratory will become the competitor of the wheat fields of the world for the supply of food to man and beast; nor could any blockade prevent an enemy from replenishing his larder if from sunlight, water and air food could be made.

Soil Aëration and Plant Growth.

There are many indications in current horticultural practice that the roots of different plants require very different conditions as to air supply. In the case of some plants firm potting is practised, and in that of others the gardener is careful to pot his plants in a porous compost which allows not only of good drainage but also a ready passage of air to the roots.

Plants themselves show by their behaviour a similar diversity. Some root deeply, some are shallow rooting. Needless to say, the problem of determining the ideal conditions of aëration is difficult: for although all roots require air, they also require other things and conditions as well—water, food and warmth. Experiments carried out recently by Mr. W. A. Cannon* indicate, however, that if these other conditions are maintained constant aëration of the soil produces an increase in root and stem growth. The experiments were performed on *Opuntia versicolor*, the roots of which were kept in a constant temperature for eight hours. During this period the roots were exposed to two hours' aëration, by means of a slow current of air passing through the soil; then for two hours to no special aëration, and so on alternately.

By means of special measuring apparatus the rates of growth during the two-hour periods were measured, and compared with those of a control plant. The results obtained show that whereas the rate of growth of the control was 1.3 mm., the rate during aëration was 1.59 mm., as against 1.25 mm. during the non-aëration. Hence it follows that aëration of the soil produces an increase in the rate of growth.

In the light of these and other experiments, it would appear probable that the position of roots in the soil, whether deep or shallow, is to be ascribed not only to the water-content, but also to soil temperature and to amount of air in the soil.

Another factor which must also be taken into consideration is the accumulation of carbon-dioxide in the soil. This substance is, of course, produced during the respiration of plant tissues, and it has been shown that any considerable accumulation of carbon-dioxide about the roots of plants acts as a poison and checks growth.

PREVENTION OF THE EARLY SUMMER OUTBREAK OF THE AMERICAN GOOSEBERRY MILDEW.—Dr. HORNE, of the R.H.S. Gardens, Wisley, writes to us as follows:—Experiments which have been conducted during the last three years at Wisley on the American Gooseberry mildew have this year been productive of striking results. By the use of a modified form of Burgundy mixture an outbreak on the foliage and berries of over one hundred bushes has been completely prevented. The mixture was used according to the following formula:—Strength I.: Copper sulphate, 81½ ozs.; washing soda, 91½ ozs.; soap, 100 ozs.; water, 100 galls. Strength II.: Copper sulphate, 40½ ozs.; washing soda, 45½ ozs.; soap, 100 ozs.; water, 100 galls. The chemicals were dissolved separately, the solutions mixed when quite cold, and the soap added last. Both strengths proved effective. Spraying took place on May 20, at 5 p.m. (Willett's time), when the bushes were just dry after gentle rain in the afternoon. In the critical experiment the sprayed and unsprayed bushes are situated in a plot 10 feet by 10 feet and outlined at the angles by old bushes to provide sources of infection. There are some 60 of these plots, and within each are three unsprayed bushes and one sprayed bush. The sprayed bushes are absolutely free from mildew, whereas over forty of the unsprayed bushes are now infected with mildew, some very heavily, the outbreak occurring chiefly on the berries. At the time of writing no mildew has been detected in any of the sprayed bushes, even when completely surrounded by infected ones. Whereas all the berries on the sprayed bushes are absolutely free from mildew many on the unsprayed bushes are heavily infected with the early "white" stage of the disease. In another experiment all the bushes in a small plot adjacent to the main experimental area were sprayed, and are now also free from mildew. Burgundy sprays leave a fine deposit on the berries, consisting of a mixture of the precipitates of copper carbonate and sodium sulphate. But since nearly the whole of this deposit can be removed by rinsing in tap water, it should not prove difficult to devise a means of thoroughly cleansing the berries.

HORTICULTURAL CLUB.—The members and friends of the Horticultural Club will visit Friar Park, Henley-on-Thames, on Thursday, June 22. The party will leave Paddington at 9.15 a.m., and proceed to Marlow Station. A launch will be waiting at Marlow to continue the journey to Henley, where the President, Sir FRANK CRISP, Bart., will entertain the members at lunch. An inspection of the gardens at Friar Park will afterwards be made. Members who may wish to get back to town early will return to Paddington by train from Henley, but the rest of the party will proceed by the launch to Reading, where saloon carriages will be in waiting for the return journey to Paddington. The secretary will be glad if members will apply for tickets before the 15th inst., addressing their communications to the Treasurer, Sir HARRY J. VERRIN, 34, Redcliffe Gardens, S.W.

WOMEN GARDENERS AT EVESHAM.—In the *Daily News and Leader* for May 30 there appeared an interesting article by MARY M. BROWN on the work of a hundred women market gardeners employed at Evesham. They work under the direction of an experienced market gardener, and find the occupation both healthy

* Annual Report of the Department of Botanical Research of the Carnegie Institution of Washington, 1915.

* See Annual Report, Department of Botanic Research, Carnegie Institute, Washington, 1915.

and interesting. It is noteworthy that Mr. GEORGE JONES, who employs seventy of the girls, remarks, "the educated, well-bred girl is highly satisfactory in every way—more so than the industrial girl. I expect we shall have 300 lady fruit-pickers at Evesham this season, and no doubt people will prefer fruit picked by ladies to that picked by tramps and casuals." Miss BROWN describes the homes of the girls, where they spend their leisure. "In a cool, blue-walled room, with bowls of flowers . . . four girls sat at tea, and their laughter rang happily. They had put in a ten hours' day Radish-pulling. All the girls to whom I spoke said the work was hard, but they loved it. . . ." If this is the spirit of the women gardeners they are bound to succeed.

THE CHANGES BROUGHT ABOUT BY HEATING SOIL.—The changes produced in soil by heating are the subject of an investigation by Miss A. WILSON.* The author finds that in addition to the well-known increase in soluble matter heat produces a marked change in the water-holding capacity of the soil. After being subject to heat, soil is able to absorb larger quantities of water than similar unheated soil.

LETTERS FROM THE FRONT: SALONIKA.—Perhaps a few lines on the Serbian Marrow or Pumpkin might be of some interest to fellow-readers of the *Gardeners' Chronicle*. This Marrow is one of the most hardy and firm-fleshed of its kind, and frost and snow have little or no effect on it. The fruit forms one of the main foods of the poorer classes, and with bread and a little meat is partaken of at most meals. The flesh has a fine golden tinge, and the skin, when young, is much harder than the English Marrows (though by no means impossible to eat). It is quite yellow, no green tinge except a ring round the stalk, about 2 inches from the joining-place. The plants bear a heavy crop, and the fruits grow to a large size. I saw one that was 6 inches round at the root. The fruits ripen in a few days on the sunny hillsides, and at once commence to harden; they are cut when very old, and stored in the houses. If left in the open and exposed to the wind, frost and rain they do not change, but are just as firm and good. *G. R. S., Salonika, May, 1916.*

ORIGIN OF THE NAVEL ORANGE.—The *Queensland Agricultural Journal* states that the navel Orange first appeared as a bud sport of the Portuguese variety, *Laranja selecta*, and was propagated by a Portuguese gardener at Bahia in 1822. There are now about 50,000 trees growing navel Oranges at Bahia. The fruit was introduced into the United States in 1873 by WILLIAM SAUNDERS, horticulturist and landscape gardener of the Patent Office. The American Consul sent him some of the trees, which he budded on seedlings grown in the Government greenhouses. He sent two to California and the others to Florida; the latter never did well, but the former thrived, and are still living and bearing fruit, all the navel Orange trees in California being their progeny. There are about 100,000 acres of the variety in that State, and about 10,000,000 boxes are produced every year. The navel Orange cannot be grown from seed, as it contains no seed. In California it is generally budded upon stocks from the Mission sweet seedling Orange.

CARNATION "YELLOWS."—In our issue for March 11, p. 141, a note was published giving an account of some experiments conducted in America by Professor PELTIER, of the Floricultural Department, University of Illinois, at Urbana, Ill., U.S.A., with respect to a disease of Carnations known as "Yellows." We are informed that Professor PELTIER's investigations lead him to think that it is a physiological complaint, and unconnected with any fungus, insect, or bacterium, and that it is not transmissible

from one plant to another, being carried on from season to season by means of affected cuttings. He would be glad to hear from any readers of the *Gardeners' Chronicle* who have experience of this condition in Carnations, with a view to obtaining information that may serve further to elucidate the problems in connection with the malady.

TREBIZOND HONEY.—The prominence given in recent days to the name of Trebizond recalls the fact that *Azalea pontica* flourishes in profusion on the mountain slopes of the district, the plant supplying a poisonous honey.

"Those bees of Trebizond,
Which from the sunniest flowers that glad
With their pure smile the garden round,
Draw venoms forth that drive men mad!"

It is to the deleterious properties of the honey of this region bordering the Black Sea coast that Xenophon refers in his famous account of the "Retreat of the Ten Thousand" in Asia, after the death of Cyrus, when he tells how his soldiers

Board of Agriculture, March, 1916). These authors find, however, that a mixture of liver of sulphur, soft soap and paraffin emulsion gives results which are distinctly promising. Trials with liver of sulphur and soft soap proved unsatisfactory owing to the failure of the spray fluid to wet thoroughly the mycelium on leaves affected with the summer stage of the fungus. Tests were therefore made with a spray fluid containing paraffin emulsion in addition to soft soap and liver of sulphur. The mixture is made thus: 20lb. of soft soap and 3½lb. of liver of sulphur are dissolved, with constant stirring, in 5 gallons of boiling water. Two gallons of paraffin (preferably "Solar Distillate" brand) are forcibly sprayed into the hot solution by means of a garden syringe and rose nozzle. For use add 19 gallons of water to one of the concentrated emulsion. The spray fluid was tried on Whinham's Industry and Keepsake, on which the diseases appeared in May. In June, when the disease was at its height, the spray was applied, care being taken to wet the bushes thoroughly.



FIG. 155.—ORCHIDS FOR THE R.H.S. RED CROSS SALE: ODONTOGLOSSUM CRISPUM LEONARD PERFECT.
(See p. 307.)

became stupefied and delirious, as if intoxicated, after eating of the honey of Trebizond. The bad effects of the honey extracted from the shrub are, however, only temporary. The honey is shunned by the natives, as they know full well its poisonous and narcotic effects. At this time of the year—the season when the *Azalea* blossoms—the region around Trebizond presents a brilliant appearance.

WAR ITEM.—Private JOHN BROWN, of the Black Watch, who was killed in action on April 27, was a member of the garden staff at Forgan-denny, Perthshire. He served his apprenticeship as a gardener at Drumlanrig Castle, Dumfriesshire, and belonged to the Drumlanrig district.

SUMMER SPRAYING AGAINST AMERICAN GOOSEBERRY MILDEW.—The conclusion reached by Messrs. EYRE and SALMON, that solutions of liver of sulphur are inefficient, is confirmed by the experiments carried out at Long Ashton by Professor BARKER and Mr. LEES (see *Journal of*

Examination of the bushes a few days later showed that the fungus had been killed and that no new conidia had been formed. No further outbreak occurred during the year, further spraying was not tried. None but a few bushes of Keepsake were injured. Few shoots showed any recurrence of the disease, and very few perithecia (winter stage) were produced. Further trials are promised, and it is suggested that now that a spray capable of wetting the foliage has been found fungicides other than liver of sulphur may prove more effective. In this connection it will be interesting to learn the effect of substituting ammonium sulphide for liver of sulphur, for that substance has given promising results when used by Messrs. EYRE and SALMON.

PROTECTING FRUIT TREES FROM RABBITS.—The Assistant Fruit Expert of New South Wales mentions in the *Agricultural Gazette* that swabbing the trunks of trees with strong lime-sulphur solution is a good preventive of rabbits nibbling

* Notes from the Botanical School, Trinity College, Dublin No. 6, Vol. 2, April, 1916.

the bark. A little bone-dust added is in some cases an advantage. Wrapping the trunks with brown paper is another sure way of preventing the rodents from biting the stems. Sticks saturated in wood-preserving oil, and placed in the ground at intervals near the young trees, have proved in many cases to be very efficacious.

IMPORT OF LAWN MOWERS PROHIBITED.—Among the latest list of articles the import of which into this country is prohibited by the Board of Trade are lawn mowers.

INHERITANCE OF FLOWERING TIME IN PEAS.—It was MENDEL who first suggested that early and late flowering in the Pea formed a pair of characters subject to the same law of inheritance which he had found to hold good in other cases. Since his time several investigators have busied themselves with the same problem. The most recent of these is Dr. YUZO HOSHINO, whose results are published in Vol. VI., Part 9, of the *Journal of the College of Agriculture*, Sapporo, Japan. The cross between early and late-flowering Peas gave plants which flowered at an intermediate time, but much nearer to the late than to be early. An F_2 generation raised from these plants exhibited a wide range of flowering time, some being as early as the original early parent, others as late as the original late one, every intermediate type being also found. Further generations showed that some of the F_2 plants bred true to early flowering and some to late flowering; while others could be got to give strains with a constant intermediate flowering period. Dr. HOSHINO explains these results by supposing that two Mendelian factors, A and B , are concerned, each of which brings about late flowering, though the action of A is more intense than that of B . A late-flowering plant may be represented as $AABB$, an early flowerer as $aabb$, and a constant intermediate as $AAbb$ or $aABb$, the latter being the earlier. Dr. HOSHINO's interpretation receives interesting support from the relation of flower colour to flowering time. The original late-flowering variety used had coloured flowers, while the early variety had white ones, coloured flowers being, of course, dominant to white. In the F_2 generation, from early \times late, the early flowering group contained more white than coloured plants, whereas in the late-flowering group the coloured were nearly thirteen times as numerous as the white. Further experiments showed that this linking of flower colour with flowering time occurs in a definite manner, and is of the nature of what has been described as gametic coupling, the factor for flower colour being associated with one of the two factors which brings about late flowering. The undoubted fact of the coupling of such a definite thing as flower colour with the more variable character of flowering period is strong evidence for Dr. HOSHINO's contention that the flowering period depends essentially upon the interaction of only two Mendelian factors, and that the variability which it shows is largely the result of fluctuating environmental conditions. *R. C. P.*

SOLDIERS FOR FARM WORK.—The Board of Agriculture states that farmers who desire to obtain the assistance of soldiers for work on the land should apply to the local Board of Trade Labour Exchange (the address of which can be obtained from any post office) for the necessary application form. A soldier cannot be released to work continuously on a farm, and not more than four consecutive weeks' furlough will be given to any one man. If a farmer lives in the neighbourhood of a military station he may apply direct to the Commanding Officer for the soldiers whom he requires at short notice, and for a period not exceeding six working days. The other conditions of employment remain the same as was the case last year. Commanding Officers will meet the demand for soldier labour as far as they are able, but men under training cannot be released.

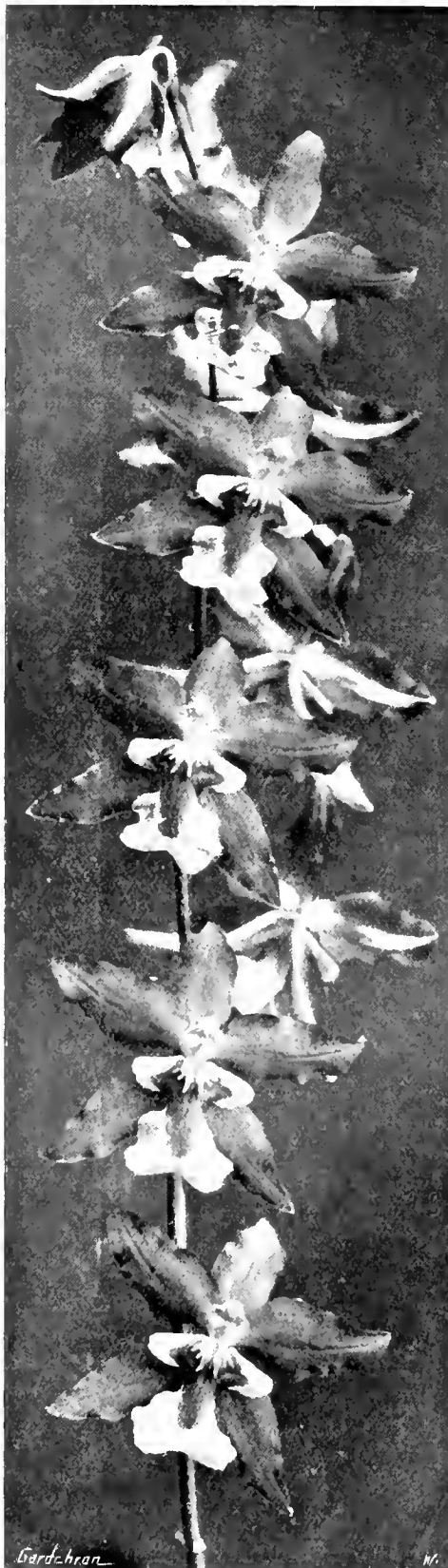


FIG. 136.—WILSONARA INSIGNIS.
(See Awards by Orchid Committee, p. 315.)

PUBLICATIONS RECEIVED. *A Short History of English Rural Life from the Anglo-Saxon Invasion to the Present Time.* By Montague Fordham, M.A. (London: George Allen and Unwin, Ltd., 40, Museum Street.) Price: paper, 2s. 6d. net; cloth, 3s. 6d. net.—*Annual Administration Report of the Forest Department of the Madras Presidency*, for the twelve months ending June 30, 1915. (Madras: printed by the Superintendent, Government Press.) Price 1s. 9d.—*Flower Culture Month by Month.* By Mary Hampden. (London: Herbert Jenkins, Ltd., 12, Arundel Place, Haymarket.) Price 5s. net.

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE COMMON OR NORWAY SPRUCE.—Like Mr. Richardson, I "dissent most emphatically" from the views of your previous correspondents that the timber of the Spruce is "unduly praised" and "greatly overrated." Evidently the engineer of one of our largest railway companies thinks so, too, as he showed me a number of trees last week, cut twenty miles from London, for which 1s. 4d. per cubic foot was paid in the woodland. The timber is to be used for most important purposes. For purely financial reasons, my advice all along has been, plant the Spruce where suitable conditions prevail. *A. D. Webster.*

SMALL ONION SETS.—May I add to the reply given on p. 292 to *H. A. C., Wolverhampton*, to point out that small bulbets of the ordinary Onion are produced by sowing seed thickly on a poorly manured patch of ground at the usual time. After early watering if necessary to start the growth, nothing is done except to hand-weed. In August or thereabouts the tiny bulbs are harvested and planted out the following spring. Vercier says the bulbets ("Oignons grelots") of 12 to 16 millimetres diameter are the best for general use. I have not tried the varieties mentioned by him and by Vilmoren; Ailsa Craig and Sutton's Long Keeping succeeded quite well; part of the bed was left unharvested the first season, and last year some grelots from the old sowing were planted out. They had hardly increased in size in the two years' growth, as also some that again were not harvested, and were planted out after growth had commenced, which is not so rapid a process as putting in the bulbets. Both lots grew quite well. This year five remain in the bed; all are small, and three at least are going to blossom. Last season there was a good deal of disease about, so I did not plant out any of the new-made grelots. Vilmoren gives two "Rocamboles"—Ail R. and Ognon R.—*Allium Scorodoprasum* and a variety of *A. Cepa* respectively; the latter being the Egyptian, or Tree Onion. My sister informed me that all the Onions grown in Albania appeared to be raised from sets, but, unfortunately, she was unable to send me any for trial. The Leek from that region has a tendency to sprout at the flower-heads; it is a long variety, and seems to differ from those given by Vilmoren in being more resistant to cold than the long varieties he mentions. Last year the seed crop failed, and cultivation is being continued from bulbs, but I have a few 1914 seeds if anyone cares for a pinch. *H. E. Durham.*

THE INTRODUCTION OF THE DAHLIA.—I am obliged to *R. P. B.* for his note on p. 282, but if *The New Dictionary of Gardening* (1807) is the same work as my copy of *A Complete Dictionary of Practical Gardening* by Alexander McDonald (1807) the reference he gives throws no light upon the first introduction of the Dahlia into England by the Marchioness of Bute in 1789, but to its second introduction here in 1804 by Lady Holland. Presuming that the Marchioness of Bute was really the first introducer of the Dahlia into England in the year 1789, what was her name and title at that time? John Earl of Bute died in 1792, and his wife, the Countess of Bute, died two years later. It is evident that she was not the person who introduced the Dahlia, for the Marquisate was not created till 1796. Therefore the lady who bore the title Marchioness of Bute, if she it was, who procured or sent home the flower from Spain, must have been known by some other title at the time she introduced the Dahlia in 1789. Was she the wife of the eldest son of John, third Earl of Bute? It would be interesting if this could be satisfactorily explained, for among the many blunders that have been repeated by the Dahlia historians this question does not seem ever to have been satisfactorily dealt with. The Marchioness of Bute mentioned in *Hortus Kewensis*, 1813, could not have been the bearer of such a title in 1789, for the reasons above mentioned, but she still might have been the introducer of the Dahlia in that year when her title was something different. *C. Harman Payne.*

TULIP DISEASE.—The Tulip disease, which I believe is brought about by the fungus *Botrytis parasitica*, made its appearance in the public gardens in this borough a few years ago. A considerable number of bulbs, including Hyacinths, Narcissus and Tulips, were destroyed. I communicated with Mr. Chittenden on the matter, and he kindly informed me that there was no known remedy, and that the best course to adopt was to plant other subjects in the affected areas for a year or two, otherwise to renew the soil and avoid acid manures and decaying vegetation. Further, to use lime freely in the ground during the process of digging. The course we adopted was to renew the soil to a depth of 2 feet—a laborious undertaking, seeing that spring-flowering bulbs are planted here on a large scale. The following spring a few bulbs only were affected, but the next season huge gaps appeared in a number of the prominent beds in each garden. Happily provision had been made for loss in this way, about 3,000 bulbs having been potted and plunged in the frame-ground. Last autumn another method was tried, e.g., the soil was removed to the ground or grass level, a thick layer of freshly-slaked lime was spread over the surface, followed by a 1 inch layer of soil from borders free from the disease. Upon this the bulbs were arranged and covered with a 4-inch layer of the same material. Not a single bulb was lost this spring. In peace time we plant 70,000 bulbs. *Walter H. Aggett, Supt. Public Gardens, Bermondsey Borough Council.*

PLANT WARFARE.—In Dr. Brenchley's article on p. 293 mention is made of the fact that fruit trees in grass are less healthy than those planted on cultivated ground, and, further, that it is supposed that grass exercises some poisonous influence over trees, although no actual poison has been detected. I believe it is also a fact that the soil under grass is sometimes found to be richer in plant food than that of the cultivated ground, so that the more flourishing trees are actually in the poorer soil, and the less flourishing trees are starving in a land of plenty. It occurs to me that possibly the poison theory has arisen from considering the matter from a point of view that is too purely chemical, and that the trees in grass are suffering from the want of the beneficent effects of soil-stirring cultivation, which results in aeration, and the consequent encouragement of the soil bacteria that are essential to the unlocking of the plant food stored up in the soil. *Harold Evans, Llanishen, Cardiff.*

STAR OF BETHLEHEM.—In reply to Mr. H. E. Durham (p. 301), I cannot speak from experience about the bulbs of *Ornithogalum umbellatum* as food, but many writers, from Dioscorides and Pliny downwards describe them as being edible and nutritious. Redouté is the only author known to me who gives directions for cooking them. In his splendid, though imperfect, work on the Liliaceae (Paris, 1802) he says the bulbs are sweet and serviceable as food in times of scarcity. "They may be roasted like Chestnuts or boiled in water. M. Poinet testifies to having used them for food with advantage." Probably the proper time to lift the bulbs is in August or September, before the new season's growth begins in mid-winter. *Herbert Maxwell, Monreith.*

PEACHES AND NECTARINES FAILING TO SET (pp. 273, 300).—I have read with much interest the correspondence raised by Mr. Beckett on this subject. The experience related therein coincides with my own here. There is one distinct feature about most of the cases, and that is, whereas trees in early houses are carrying good crops, those in late houses are a failure; and this, with us, applies to trees in pots as well as those planted out. In seeking the cause in our own case, I have abandoned the idea of drought at the roots or cultural conditions having had a contributory effect, and look for it entirely in the climatic conditions that obtained over a period of four months—December to March. A mild December was followed by a record mild and bright January, by the end of which all our trees, early and late, were just on the point of bursting into bloom. Those in the early houses, kept growing from this time

steadily, are carrying good crops, but those we held back are a failure. I feel confident had we kept them all going from this date we should have had a good set throughout. This fact, and the last paragraph of Mr. H. C. Loader's letter

(p. 300 of your last issue), describing the stunted conditions of the flowers and anthers that followed as a result of a sudden change in the weather, give, in my opinion, the answer for our failures. *N. F. Barnes, Eaton Gardens, Chester.*

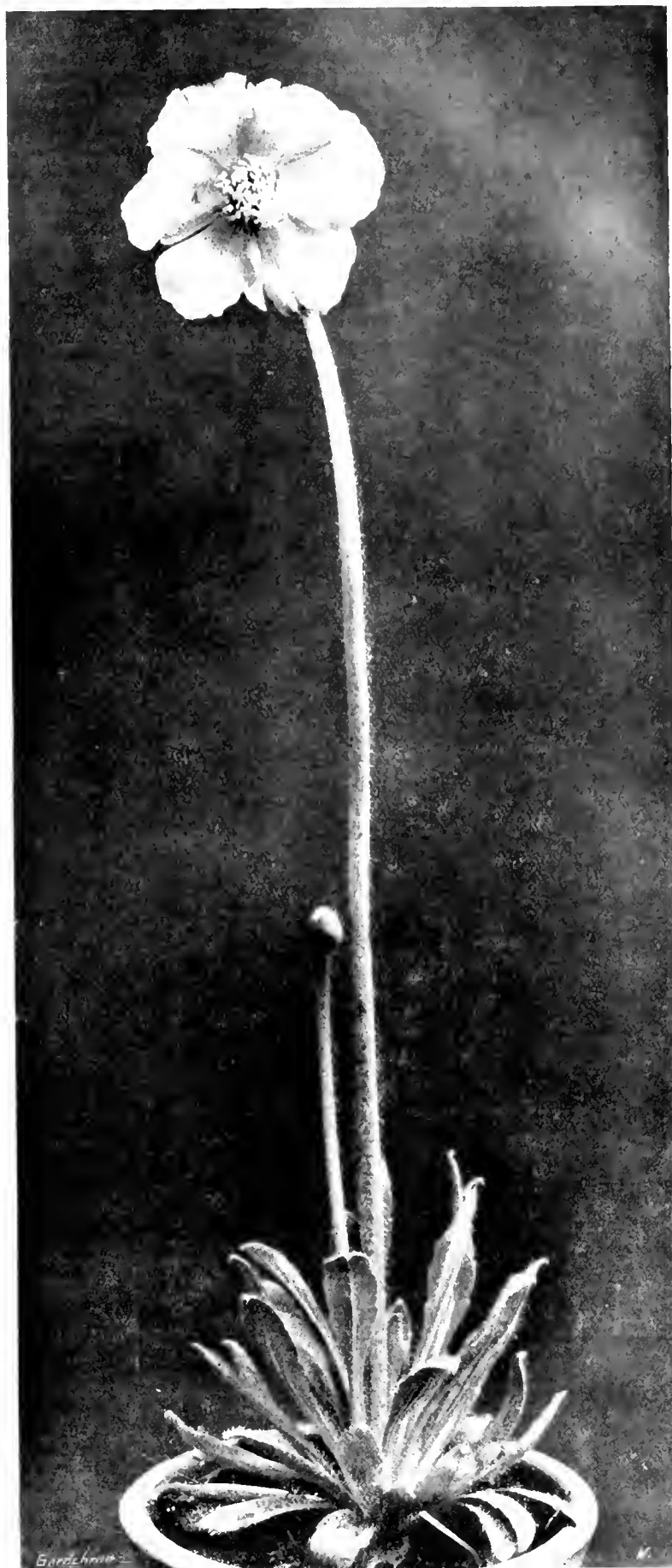


FIG. 137. —*MOCONOPSIS SIMPLICIFOLIA*, BAILEY'S FORM
(See Awards by the Floral Committee.)

The failure of Peach and Nectarine flowers of the later varieties to set this season cannot be attributable to any defects in cultivation. In my opinion the true cause of the

phenomenon was the lack of sun-heat at the critical period, which I noted with apprehension at the time. *John Wynn, Hammonds Gardens, Checkendon.*

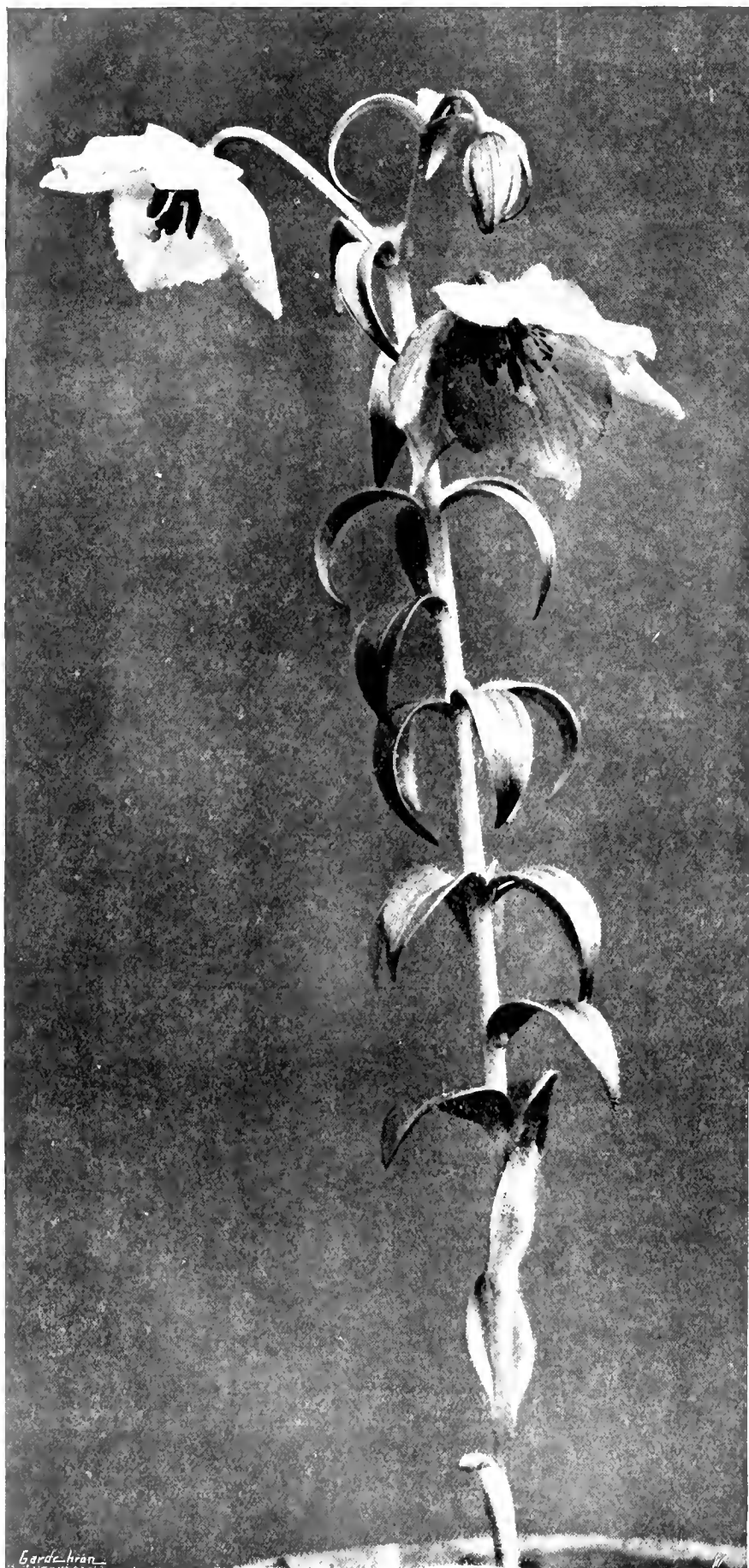


FIG. 138.—*MONOCHARIS PARDANTHINA*.
(See Awards by the Floral Committee.)

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 6.—The usual fortnightly meeting of the Royal Horticultural Society was held on Tuesday last in the Vincent Square Hall, Westminster. The exhibition was a good one, and several collections were of very high merit.

Many novelties were submitted to the Floral Committee for award; two were recommended First-class Certificates and five Awards of Merit. This committee awarded nineteen medals to collections, including the Gold Medal for an exhibit of Sweet Peas and Antirrhinums.

The Orchid Committee recommended two Awards of Merit to novelties, and six medals to groups.

The Fruit and Vegetable Committee made no award.

At the 5 o'clock meeting in the Lecture Room, a lecture on "Discoveries Concerning the Dormancy and Germination of Seeds" was delivered by Mr. Kidd. The chair was taken by Professor V. H. Blackman, F.R.S.

Floral Committee.

Present: Messrs. H. B. May (chairman), E. A. Bowles, G. Paul, W. Bean, H. Cowley, B. Crisp, W. Cuthbertson, C. Dixon, C. R. Fielder, John Green, G. Harrow, J. Heal, E. H. Jenkins, J. Jennings, J. F. McLeod, E. Mawley, J. Moorman, S. Morris, R. C. Notcutt, E. Page Roberts, C. E. Pearson, R. Hooper Pearson, G. Reuthe, T. Stevenson, W. P. Thomson, A. Turner and R. W. Wallace.

AWARDS.

FIRST-CLASS CERTIFICATES.

Meconopsis simplicifolia, *Bailey's form* (see fig. 137).—This beautiful blue *Meconopsis* was discovered by Capt. F. M. Bailey, on Pen-la, on the Subansiri-Manas Divide, in September, 1913, and the plant, which has now received the above award, was raised from seed sent home by him. The leaves are from 4 to 5 inches long, more or less erect. The plant had three blossoms, two in bud, of which the stems are 3 inches and 7 inches long respectively, and a third, fully expanded, borne on a stem 17 inches in length. The flower is blue, with a silvery sheen, especially on the under sides of the petals, which open until the flower is almost flat. The colour ranges through all four shades of the "Bleu Myosotis" of the *Répertoire de Couleurs* (No. 217), and its beauty is enhanced by the contrast of the stamens, which are bright, rich orange, set in a close group in the centre.

Monocharis pardanthina (see fig. 138).—*Monocharis* is a monotypic genus of the Nat. Ord. Liliaceae, and was founded by Franchet in 1889 (*Morat Journ. de Bot.* III.). The single representative is a native of China, and forms a plant about 1 foot high, with whorls of dark green, ovate-lanceolate leaves, suggesting *Lilium Martagon*, and bearing (in the specimen shown) three flowers of bluish-lilac colour (*Lilas bleuâtre*, *Répertoire de Couleurs*, tones 1-2). Each bloom measures 2 inches across, the petals being slightly fringed. The interior is marked with numerous rose-red dots. These two plants were exhibited by Prof. BALFOUR, Royal Botanic Gardens, Edinburgh.

AWARDS OF MERIT

Iris Rembrandt.—A variety of the Dutch section, with almost round, flat falls of a metallic blue shade, with central blotch of gold colour; violet standards and crests of a paler violet. It is a bold flower, of much substance. Shown by Messrs. DOBBIE AND CO.

I. laurigata.—A species of the Apogon section, often confused with *I. Kaempferi*, and figured in *Bot. Mag.*, tab. 7,511, as *I. albo-purpurea*. The falls are a rich, deep blue, with a line of white around a zone of cobalt blue. The standards are purplish-blue. The inflorescence is about 2 feet high. Shown by C. W. CHRISTIE MILLER, Esq., Sonning.

Rhododendron Donald Watson.—A variety with flowers of white ground suffused with pink, and a border of deeper rose shading. The truss is massive, and the bells are widely expanded, revealing in the upper segment a pleasing zone of dots.

R. Duchess of Teck.—The truss has a better habit than in the last, forming a glorious inflorescence of pale flowers, deeply tinged at the borders with lilac-rose colour. The leptodes are brownish.

R. Diphole Pink.—This variety has clear, rose-pink flowers and orange-coloured dots on the upper petal. The shade is distinct from any Rhododendron of its class.

These three Rhododendrons were shown by MESSRS. WATERER, SONS AND CRISP, LTD.

OTHER NOVELTIES.

Lychnis alpestris fl. pl.—This double-flowered variety of the Alpine *Lychnis* looks like a small white *Dianthus*. The cymose inflorescence is about 6 inches high, and has from 5-8 white flowers, each about $\frac{1}{2}$ inch across. The dark green foliage is linear-lanceolate, and sessile. Shown by Miss WILLMOTT.

Antirrhinum Blush Queen.—A magnificent variety, with a very big spike of almost pure white flowers, there being a suspicion of pink at the entrance to the throat, with a bright yellow blotch on the lip. Shown by Messrs. DOBBIE AND CO.

Rose Lady Gwendoline.—A climbing H.T. variety, with well-formed blooms of apricot rose colour. The flowers are of medium size, and have a slight perfume. Shown by Messrs. CHAPLIN BROS., LTD.

Dianthus neglectus Wargrave variety.—A fine variety of cerise-pink colour, shown by Messrs. WATERER, SONS AND CRISP, LTD.

Hippeastrum North Myrims White.—A magnificent white variety, resembling a big *Lilium longiflorum*. The filaments, as well as the style, are pure white, the only trace of colour being in the green base of the petals. Shown by Mrs. BURNS, North Myrims Park.

MESSRS. BEES, LTD., Liverpool, exhibited several new plants collected in China. The finest was *Roseoea humeana*, with large, violet-purple flowers, the broad lip being divided to the throat, which is marked with white. The hood is white and small. The plant consists of several broad, overlapping leaves, from the centre of which arise five or more of the beautiful blossoms. *Primula Smithiana*, a deep yellow-flowered species, with blooms in two or three tiers, was shown with a pale lemon-coloured form. *P. tibetica* is a glorious little species suitable for the rock garden. The plant forms a dwarf tuft of spatulate-lanceolate leaves, and bears an umbellate truss of rich pink flowers with a prominent, gold-coloured eye. *Papaver triniaeifolium* has deeply-cut, glaucous leaves. The small, nodding flowers were only in the bud stage, and not sufficiently developed to ascertain the colour—whether red or scarlet: the whole plant is very hirsute. *Meconopsis racemosa* was shown by Professor BALFOUR, from the Edinburgh Botanic Gardens. The flowers on the plant were not expanded; the petals of those that had dropped were of a deep blue flushed with purple.

GROUPS.

The following medals were awarded for collections:—

Gold Medal to Messrs. DOBBIE AND CO., Edinburgh, for Sweet Peas and Antirrhinums. Both collections were of outstanding excellence, and the manner in which they were staged was an object-lesson in exhibiting. Each variety showed for its full value, and the use of a dark velvet background threw them into bold relief, graceful *Cocos Palms* enhancing the effect. Two new Antirrhinums were shown in *The Fawn*, a very big spike of pale amber flowers with a large gold-coloured blotch, and *Mauve Beauty*.

Silver-gilt Flora Medal to Messrs. KELWAY AND SON, Langport, for Paeonies, Pyrethrums and Delphiniums. The exhibit filled two large tables facing each other, and gave a gorgeous display of colour. Of the Pyrethrums we specially noted the varieties *Agnes Mary Kelway*, deep rose colour, with prominent gold-coloured disc; *Yvonne Cayeux*, a double, cream-coloured variety, suggesting a small *Chrysanthemum*; *Queen Mary*, a fine pink double flower; and *Snow White*. Of the Paeonies, *Sunrise*, pink with cream-coloured centre, and *Mafeking*, crimson, with a scarlet sheen, were very beautiful. MESSRS. WATERER, SONS AND CRISP, LTD., Bagshot and Twyford, for Rhododendrons, hardy

flowers, and a neat rockery planted with Alpines. The Rhododendrons were superb, and included large plants of such fine varieties as *Francis B. Hayes*, *Gomer Waterer*, *Lady Hillingdon*, and *Mme. Cavell*, arranged in a bed of *Kalmia latifolia* and small-habited Rhododendrons.

Silver Flora Medal to Messrs. R. AND G. CUTHBERT, Southgate, for a large exhibit of Antirrhinums and Clarkias in pots; Mr. ELISHA HICKS, Hurst, Twyford, for Roses; Messrs. GEO. JACKMAN AND SON, Woking, for hardy flowers in variety; *Iris*es *Blue King* and *Snow Queen*, both of the sibirica section, were exceptionally fine; Messrs. H. B. MAY AND SONS, Edmonton, for standard Fuchsias, Verbenas, Hydrangeas and Ferns; Mr. C. TURNER, Slough, for varieties of *Philadelphus* and *Deutzia*. At the back overhung sprays of *Philadelphus hybridus* *Avalanch*, studded with clear white blossoms; and there was the much larger variety *Virginal*, with big double white blooms like cluster Roses. Equally good were *Deutzia crenata* *magnifica* and *D. gracilis* *rosea*. Messrs. R. WALLACE AND CO., Colchester, for *Iris*es, principally of the tall bearded section; notable varieties were *Isolene*, *Ringdove*, *pallida* *Dalmatica*, *Erica*, *Ed. Michel*, a purple self flower; *Standard Bearer*, and *Purple Emperor*, a gorgeous flower of the finest purple.

Silver Banksian Medal to Messrs. S. BIDE AND SONS, Farnham, for a collection of Sweet Peas, of which *Ruth Bide*, President, Farnham Lavender, *Lady Hunter*, apricot rose, and *Dick Bide*, old rose, are a selection; Messrs. J. PEED AND SON, Norwood, for a long table of well-flowered *Gloxinias* and *Streptocarpuses*; Mr. J. C. ALLEGROVE, Langley, for hardy flowers, in which we noticed many new Chinese plants—*Iris chrysographis*, a plant with dark red-purple flowers, first described in *Gard. Chron.*, June 10, 1911, p. 362; *Paeony Delavayi* has maroon-coloured, cup-shaped blossoms, and *Primula pycnoloba* has the small, red-tipped corolla enclosed in a pale green, foliaceous calyx; Messrs. R. B. CANI AND SONS, Colchester, for Roses; Messrs. J. CHEAL AND SONS, Crawley, for hardy flowers, trees and shrubs, and *Star Dahlias*, *Magnolia parviflora*, *Leptospermum Nichollsii* and *Deutzia gracilis* *campanulata* were all shown finely in flower; Messrs. STUART LOW AND CO., Enfield, for Carnations; Mr. W. MILLER, Wisbech, for hardy flowers; Mr. AMOS PERRY, Enfield, for *Iris*es, Poppies and other hardy flowers, and Mr. G. PRINCE, Oxford, for Roses; *Bronze Banksian Medal* to Messrs. BAKERS, Wolverhampton, for hardy flowers.

Orchid Committee.

Present: Sir Harry J. Veitch (vice-chairman), Sir Jeremiah Colman, Bart, Messrs. Jas O'Brien (hon. secretary), De B. Crawshaw, Gurney Wilson, S. W. Flory, C. Cookson, J. Charlesworth, Stuart Low, F. J. Hanbury, Pantia Ralli, E. R. Ashton, Walter Cobb, C. H. Curtis, and R. A. Rolfe.

AWARDS OF MERIT.

Odontoglossum Lambardeanum var. *Gatton Prince* (*Vuyllstekeae* × *cocculum*), from Sir JEREMIAH COLMAN, Bart, Gatton Park, Surrey (gr. Mr. Collier). A handsome hybrid, shown as "Gatton Prince," with parentage unrecorded, but which the Committee decided was a variety of *O. Lambardeanum*, first flowered by C. J. Phillips, Esq., of Sevenoaks. The fine spike bore large, broad-petalled flowers, with a white ground, but the greater part of the segments is filled with large, deep claret-purple blotches, the ground colour only showing on the narrow fringed margins, and a few transverse white lines between the blotches. The lip was white, with one large purple blotch in front of the yellow crest and some small spots inside the fringed margin.

Wilsonia insignis (*Oncidioda Charlesworthii* × *Odontoglossum illustrissimum*) (see fig. 136), from Messrs. CHARLESWORTH AND CO., Haywards Heath. The generic name is given in accordance with the R.H.S. rules for hybrid Orchids embracing three or more genera. The parents include *Cochlidia*, *Oncidium*, and *Odontoglossum*; *Oncidioda Charlesworthii* (*Oncidium incurvum* × *Cochlidia Noezliana*), and *Odontoglossum illustrissimum* (*Lambeauianum* × *ardentissimum*), and through the parentage of the latter *O.*

crispum, *O. Pescatorei*, and *O. Harryanum* enters into its composition. The hybrid approaches closely to *Oncidioda Charlesworthii*, and in a marked degree resembles *Odontioda Hermaione* (C. *Vulcanica* × *Oda. heatonensis*), many of the factors in the combination being difficult to trace. The erect *Oncidium*-like spike bore ten pretty flowers, with purplish claret-red sepals and petals, the three-lobed lip being whitish-lilac colour, with a blotch of claret red in front of the crest.

GROUPS.

Dr. MIGUEL LACROZE, Bryndir, Southampton Lane (gr. Mr. Cresswell), staged an effective group, for which a Silver Flora Medal was awarded. *Odontoglossums* were specially fine, and included typical white forms and good spotted varieties. *Laelio-Cattleyas* made a fine show, with forms of *L.-C. Canhamiana*, *L.-C. Aphrodite*, *L.-C. Fascinator*, and *Fascinator*. *Mossiae* and *L.-C. blotchleyensis*, whilst in front were plants of *Miltonia vexillaria*.

F. MENTEITH OGILVIE, Esq., The Shrubbery, Oxford (gr. Mr. Balmforth), showed 6 plants of his fine, free-growing *Cypripedium Lawrenceanum* *Hyeannum*, representing the remarkable emerald-green and white species better than it has ever been shown. The largest plant bore six flowers, and others had from two to four blooms each.

Col. STEPHENSON R. CLARKE, C.B., Borde Hill, Cuckfield, Sussex (gr. Mr. Gillette), showed *Laelio-Cattleya Fascinator* *The Bride* (C. *Schroderae* alba × *L. purpurata* *Queen Alexandra*), a finely-formed flower, white, with a slight blush tint, the disc of the lip being pale yellow with thin, dark lines from the base.

R. G. THWAITES, Esq., Chessington, Streatham (gr. Mr. Hamington), exhibited two forms of *Laelio-Cattleya Cowanii* (C. *Mossiae* × *L. cinnabrosa*), the one with salmon-tinted sepals and petals, the other pale yellow, and both with deep purple labellums.

MESSRS. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver Flora Medal for an extensive group, consisting of finely-cultivated and freely-flowered specimens. Their handsome *Miltonia Charlesworthii* and *M. vexillaria* Lyoth were fine features.

MESSRS. SANDER AND SONS, St. Albans, were awarded a Silver Banksian Medal for a group in which the varieties of *Cattleya Mossiae* were well displayed, the central plant having over thirty blooms.

MESSRS. FLORY AND BLACK, Orchid Nursery, Slough, were awarded a Silver Banksian Medal for a select group, the most remarkable and interesting plant in which was *Cattleya Mossiae* *McMorlandii*, a variety known to have been in the country about fifty years, and first flowered in the once famous McMorland collection, which was purchased by Messrs. Jas. Veitch and Sons, who received a First-class Certificate for the plant on June 10, 1879. It is probably the best of the *Arnoldiana* section, with flesh-white flowers, having a striated chrome-yellow disc to the lip.

MESSRS. STUART LOW AND CO., Jarvisbrooke, Sussex, were awarded a Silver Banksian Medal for an effective group, in which there were good forms of *Cattleya Mossiae* and *C. Mendelii*, including white varieties.

MESSRS. HASSALL AND CO., Southgate, were awarded a Bronze Banksian Medal for a group containing good forms of *Laelio-Cattleya Canhamiana* alba, *L.-C. Aphrodite*, the dark-coloured *L.-C. Damos* (*L.-C. Dominiana* × *C. Mossiae*).

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (vice-chairman), W. Bates, E. Beckett, A. Bullock, E. A. Bunyard, W. J. Jefferies, H. Markham, W. Poupard, F. G. Treseder, P. D. Tucker, P. C. M. Veitch, and S. T. Wright (secretary).

The only exhibit consisted of pot plants in fruit and a box of gathered berries of the new variety of Strawberry named *Laxtonian*, shown by Messrs. LAXTON BROS., Bedford. It is a maincrop variety with berries of wedge shape, similar in colour to Sir Joseph Paxton, which it otherwise resembles. The flesh is firm, making the variety suitable for market purposes, and the flavour is good.

ROYAL SCOTTISH ARBORICULTURAL (Aberdeen Branch).

MAY 20.—The quarterly meeting of this branch was held in the Aberdeen University Buildings on Saturday, the 20th ult. Professor Trail, president, occupied the chair. It was agreed that no excursion be held this season. Thereafter an interesting discussion on "The present and prospective condition of the timber trade arising from conditions of war," was opened by Mr. C. S. FRANCE, retired forester, Aberdeen.

PERPETUAL-FLOWERING CARNATION.

MAY 23.—At a meeting of the Floral Committee of the above society held on the 23rd ult. the society's Award of Merit was granted to the Perpetual-flowering "Malmaison" variety Mrs. Myles Kennedy, exhibited and raised by STUART LOW AND CO., Bush Hill Park. The new variety represents a Perpetual-flowering Carnation, resembling Princess of Wales.

LAW NOTE.

LANDLORD'S RIGHTS IN GARDEN PLANTS.

At the West London Police Court recently a tenant claimed the right to remove a number of Rose trees from the garden of a house of which she was surrendering the tenancy. The plaintiff stated that it had been understood at the time of taking the house that any plants which were put in should be permitted to be removed in the event of the plaintiff's leaving. The magistrate decided, however, that any promise made by the landlord to that effect was not binding, there having been no consideration therefor. He further stated that if plaintiff wished to pursue the action further it would be necessary to take proceedings in a County Court, a police court having no jurisdiction in the matter, as Rose trees fixed in the soil were according to law freehold.

Obituary.

GEORGE WYTHES.—We much regret to record the death of Mr. Geo. Wythes, V.M.H., late gardener of the Duke of Northumberland at Syon House, Brentford, and Alnwick Castle, Northumberland. Mr. Wythes was born at Worcester in 1850, and commenced his gardening career in Herefordshire. He was employed successively at several large establishments, and obtained his first position as foreman at The Hendre, Monmouth, the residence of Lord Llangatock. He was subsequently foreman at Knowle, Devon; Woburn Abbey, Bedfordshire; Flixton Hall, Suffolk; and Stourton Hall, Lincolnshire. In 1876 he was appointed superintendent of the newly-formed Alexandra Park, Manchester, a post which he relinquished in order to become head gardener at Thirlestaine Hall, Cheltenham. On leaving Thirlestaine Hall he was appointed head gardener to Lord Hatherton, at Teddesley Park, Staffordshire, where his services met with very high appreciation on the part of his employers. In 1888 Lady Hatherton recommended Mr. Wythes to her sister, the Duchess of Northumberland, as successor to the late John Woodbridge, who was gardener at Syon House for many years. At a later period Mr. Wythes undertook the superintendence of the gardens at the Duke's Alnwick seat, which necessitated frequent journeys by train to Alnwick.

It was during his term of service at Syon House that Mr. Wythes came prominently before the gardening public, owing to the numerous exhibits he contributed to the Royal Horticultural Society's meetings. Few men have been more consistent exhibitors than Mr. Wythes was for a number of years. His exhibits included plants, fruits, and vegetables, and it was rare for him to be entirely unrepresented at any of these shows during the nineties. He obtained several Gold Medals for collections of vegetables, and the medals awarded him must have exceeded the number obtained by most gardeners of his day—though perhaps surpassed

now by Mr. Beckett and some others. Mr. Wythes introduced a number of novelties. Some of the best known include Potato Syon House, Dwarf French Bean Wythes' Early Gem, Progress, and Favourite, and Melon Syon House and Syon Perfection. He was a member of the committee of the Gardeners' Royal Benevolent Institution, on which body he served for something like thirty years. He was also a member of the Fruit and Vegetable Committee of the Royal Horticultural Society for upwards of a quarter of a century. He acted as treasurer of the short-lived National Vegetable Society, in which he took a great interest. Since his retirement from Syon House in 1906 he had lived at Folkestone, where he died at the end of last month. His wife predeceased him by several years; they had no children.



THE LATE GEORGE WYTHES.

ANSWERS TO CORRESPONDENTS.

CARNATIONS FROM SEEDS: W. L. Warren. Carnations may be raised from seeds sown in August, but the results, compared with the usual practice of sowing in spring, would not repay the extra trouble and labour involved.

CUCUMBERS DYING: B. B. The leaves of your Cucumber are affected by Cucumber Spot. Spray the plants with liver of sulphur. There is no disease on the fruits themselves, which have died for lack of nourishment owing to the unhealthy condition of the foliage.

DAPHNE CUTTINGS: G. M. P. You do not state which species of Daphne you have failed to strike. All the members of this genus require extra careful treatment. It is immaterial how the cuttings are made, but the usual practice is to pull them off with a heel of old wood and lightly trim the rough ends with a sharp knife. The compost in which they are inserted should be of a very sandy nature, and great care must be observed in the watering of the cuttings. Watering is best done by dipping the cutting pots in water up to the rim of the pot or just below it. By doing this the collar of the plants is kept dry, which is important until the stems have become sufficiently hardened to withstand overhead waterings.

NAMES OF FRUITS: A. J. K. Apple Northern Spy.

NAMES OF PLANTS: E. D. The dense shrub is *Olearia myrsinoides*; the shrub with black flowers is *Pittosporum undulatum*; the blue flower is *Polemonium coeruleum*; the Rhododendron is *R. campylocarpum*.—D. W. T. 1. *Crassula lycopodioides*; 2. *Sedum spectabile*; 3. *Sempervivum* sp.; 4. *Oxalis* sp.; 5. *Arenaria*

serpyllifolia; 6. *Sagina procumbens*; 7. *Sedum reflexum*; 8. *Carex pendula*; 9. *Sisyrinchium striatum*; 10. *Ginkgo biloba*.—Edwin Durham. 1. *Ceanothus Veitchianus*; 2. *Exochorda grandiflora*; 3. *Lavatera Olbia*; 4. too advanced to identify correctly.—L. M. 1. *Cestrum elegans*; 2. *Peraphyllum ramosissimum*.—H. F. W. 1. *Alyssum alpinum*; 2. *Alyssum alpestre*; 3. *Potentilla splendens*; 4. *Potentilla ambigua*; 5. *Juniperus communis* var. *fastigiata*.—M. T. Haslam. *Pyrus Aria* (White Beam Tree).—L. C. *Acer campestre*.—R. E. 1. *Brassica tenuifolia*; 2. *Geranium molle*; 3. *Chelidonium majus*.—J. B. L. The fungus is *Coprinus micaceus*; it is not edible.—Jumbo. 1. *Nepeta Mussinii*; 2. *Rosa rugosa* white variety; 3. *Centranthus ruber*.

PEAS EATEN BY INSECTS: P. S. W. The plants are attacked by the Pea and Bean weevil. Spraying with arsenate of lead will rid the crop of the pest. Other measures include dusting the plants with soot and lime whilst the dew is on them or after rain, applications of weak mixtures of paraffin and soft soap in solution, and dusting with guano.

SILVER LEAF DISEASE: *Silver-leaf*. Opinions on the subject of silver leaf disease are divided. On the one hand, it is held that the disease is the work of a fungus, *Stereum purpureum*, which gains access to the tree from the soil through wounds. The silvery appearance of the leaves is due to the rupture of the walls between the cells of the upper layer of the leaf. As crushed ice is white owing to the air which intrudes between the particles, so the diseased leaf assumes a whitish appearance owing to the air filling the spaces formed by the rupture of the walls between the cells. Evidence has been adduced by Prof. Percival and others in favour of this theory; it has, for instance, been found possible to produce the symptoms of silver leaf by inoculating a tree with *Stereum purpureum* obtained from another. The *Stereum* obtained from different hosts, however, has been found not to be of equal virulence in every case; and different varieties of Plum trees exhibit varying degrees of susceptibility. Soft-wooded varieties are, on the whole, found to be more susceptible than hard-wooded sorts, and there are some which appear immune, viz., Black Diamond, Jefferson, Greengage, Bullace, and half-a-dozen others. Experts who dissent from the opinion that the disease is due to the action of the *Stereum* hold that silver leaf will make its appearance after a particularly wet season, that it is the result of too much nitrogenous manure, and that it can be produced solely by growing trees too near to the drain of a stable. No certain remedy is known. Some who have made the disease the subject of careful investigation have tried the injecting of sulphate of iron into the roots, stem, or branches of the tree, or mixing it with the soil; but, unfortunately, though in some cases an improvement was noted, it was not completely established that it was due to the sulphate of iron, and the only point on which all were agreed was that, whether it was a remedy or not, it could in no circumstances be considered a cure in the sense that it rendered the tree immune from future attacks. Spraying has been found completely unsatisfactory, even with strong Bordeaux mixture. Most growers find that the only means of checking the spread of the disease is to cut back the affected trees well beyond the first discoloration of the wood, and burn the cuttings; but this is scarcely a solution of the problem. You will find information on the various experiments which have been made at the following references in our pages:—Nov. 12, 1910, p. 356; Aug. 9, 1913, p. 104; *Oct. 25, 1913, p. 293; *Nov. 22, 1913, p. 357; Dec. 6, 1913, p. 404; Dec. 13, 1913, p. 426; Dec. 27, 1913, p. 462. The account of Mr. Molyneux's experiments is contained in the reference marked with a star.

Communications Received.—W. T. Ltd.—L. T. S.—G. B. A. P.—F. V. T.—A. R.—W. C.—R. F. D. C.—A. W.—C. T.—W. H. S.—R. L.—R. W.—R. C.—R.—H. G.—H. V. O.—Prof. B.—K. B.—W. T.—J. F.

THE

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THE STATE OF BELGIAN HORTICULTURE.

I HAD the great pleasure, when the War Horticultural Relief Fund was started, of expressing the deepest gratitude of our horticulturists for the endeavours made in England to provide for the restoration of the nurseries in Belgium which have been destroyed during the war. Those endeavours are still being continued, and it may therefore be interesting to give some definite information as regards the conditions in Belgium and the ways in which relief could be brought to our horticulturists.

First of all, I feel compelled to warn the public against such information as reaches them from neutral sources. Belgium is for the time being in the state of a beleaguered fortress, and any news, good or bad, leaking through the electric wire entanglements, should only be accepted with extreme reserve. While some reports prove to be exaggerated, others give optimistic views which are disproved by facts. In many cases, also, bad conditions are not known to people residing abroad, because the sufferers are under the claws of the enemy and exposed to severe retaliation for an indiscretion. By reason of the kind of work I have had to perform here, I have been in a position to deal with many reports, but I only make use of those cases in which a thorough investigation has proved the accuracy of the facts, and I prefer to take account only of what I saw myself before I left the country, of what I have received directly from reliable sources, and of statements made by the enemy himself.

The situation is best considered separately for each horticultural speciality. In this respect we may examine successively vegetable growing, outdoor fruit culture, vine cultivation under glass, and plant production (Ghent specialties).

Vegetable growing as an industry is, apart from the suburbs of large towns, mostly practised in the Louvain and Malines districts. Both produce for canning and for export. Although wanton murder has been committed to a greater extent in and about Louvain, there is no doubt that Malines, a district within the range of

the Antwerp forts, has suffered more damage to its nurseries. One of our State horticulturists, M. De Meyer, who succeeded in escaping from Belgium in the spring of last year, has given a vivid account of the damage. Several nurseries had to be destroyed by the Belgian sappers, many others, a list of which we possess, had their glass-houses blown to pieces by the shell explosions, the remains of their frames scattered to the winds; big shell holes were to be seen everywhere in the gardens, while in several instances water pipes, crooked and twisted, were lying over the vegetable beds.

Another report sent by a person whose statements I know to be accurate, tells us that out of a thousand glasshouses around Duffel and Waver Ste. Catherine (just outside Malines), over 500 were smashed.

Most of the growers returned to work very quickly, repaired the damage as well as possible, and managed to get a crop last season. Vegetables, being almost a necessity, were, as a rule, sold fairly well, but the Germans soon prohibited exports, and the prices were artificially kept low. They even determined the prices at which the produce was to be sold. It must be added that everything is paid in German coin at the pre-war value, and as a result of the depreciation of the mark, vegetables sold for one shilling bring only ninepence to the grower. Furthermore, no fertilisers could be had. The greatest decrease in yield was, however, caused by the low quality of the seeds. These come mostly from abroad, and, the supply being stopped, old stock and less suitable varieties were used.

Attempts were made in 1915 and also this spring to secure seeds from England, but owing to the political situation, the required help could not be given.

Such vegetables as are grown for canning, as Asparagus (and this may be considered the chief crop around Malines, and to the north of Louvain), are unprofitable, as it is not a time to immobilise capital in preserved goods. Moreover, it has been proved by their own records that the Germans cannot get rid of their home-grown stocks in Brunswick. By the way, the two biggest canning factories, "Le Soleil," at Malines, and "La Corbeille," at Wespelaar, were severely damaged by artillery fire.

The case of the "Brussels Chicory" growers is a peculiar one. They relied to a large extent on export to France and America. Now the Germans commandeer the whole crop at whatever price they wish. In the meantime, Chicory growing is being pushed on in America, and it is feared that this valuable customer will be forever lost for Belgium. What a calamity this would mean may be realised when it is known that America took all the very best quality of that vegetable, and that hundreds of growers found the largest part of their income in it.

As regards the fruit-growing districts, in Flanders, around Tongres, Looz, St. Trond, Herve-Visé, and the Valley of the Meuse, where practically every village witnessed atrocities, it should prove easy, with the help that is likely to be forthcoming, to repair material damage after the war. As early as last year the orchards were under normal cultivation, but large quantities of fruit could not be sold at remunerative prices. Every Cherry grower of Monland and St. Trond relies on the English market, which, of course, could not be reached. The same applies to the East Flanders district of Landeghem-Aeltre, which used to send its whole crop to England. On the other hand, Herve, Looz, and Tongres have always been dependent on the German market, the station of Looz alone forwarding as much as 6,000 tons of Apples and Pears a year. Owing to the scarcity of foodstuffs, the growers there should be able to do a good trade with their old customers, but again the Germans made their Obstzentrale, which took the crop. Their official reports state that 2,380 truck loads were taken

away and paid for at the low rate of 2s. 6d. to 4s. 6d. per cwt., according to kind and quality. It is worth mentioning that as much as one-thirtieth of the total cultivated area in the country is devoted to fruit growing.

Up till lately I have received more regular and more reliable news from the Grape-growing district around Brussels than from any other. In the early weeks of the invasion I myself saw many growers destroying their crops of late Grapes, as they were sure that it would not pay to devote coal and labour to them. In September and October the hothouse Grapes were sold at from 1½d. to 2d. a pound. No export was allowed, no consignments for country towns were possible, for several days even Brussels could not be reached. There was a time when many people practically lived on Grapes, and a local brewer was able to buy large quantities of Black Hamburgh, and even Muscat of Alexandria, for wine making!

In December the price for Grapes was between 2½d. and 4½d. a pound. Coal being almost unobtainable, the available crop for March and April had to be disposed of long before that time at a very bad price. The few late Grapes left, and the still fewer early forced ones (not more than one-twentieth of the customary quantities), were sold better. In May, again, the market was very dull, and when it was expected that exports to neutral countries were going to improve the situation, a German decree ordered all the fruit to be reserved for Germany at a settled price. The fortnightly records we received last year enable us to state that even before this the prices were not more than 40 per cent. of those which ruled at the same times in London.

An idea of the financial loss sustained by the Grape growers is given by some comparative figures for sales before and during the war. These were taken indiscriminately from the co-operative auction in Brussels, which controls the Belgian fruit and flower market:—

Pareels of Grapes Sold.

Jan. 14, 1914 .. 840	Jan. 14, 1915 .. 375
.. 23, .. 665	.. 23, .. 210
Feb. 14, 1915 .. 580	Feb. 14, 1916 .. 200

The value of the produce sold on February 1, 1914, was 4,294 frs. 35, and on the same day of 1915 it was 653 frs. 15.

This is the more striking, as the important consignments which before the war were sent to Allied and neutral countries are now added to the quantities sold in the Co-operative. The same is largely true for such fruit as was sold in Antwerp, Liège, Namur, Charleroi, and other places.

The harm done to Belgium through this situation may be computed from the fact that in 1913-1914 the said Co-operative sold horticultural produce to the value of over 5,000,000 francs.

The bad market for luxury fruit induced several growers to cut their Vines in order to sow vegetables (Lettuce, Spinach, Chervil). These might in good years and in new soil yield a crop of £5 to £10 per house (67 by 26 ft.). But in this case the soil was in a very bad condition, having been left without digging for years; the lack of fertilisers and good seeds also reduced the crop. Even if the normal value were reached, it would not pay much more than labour. Sinking fund, interest of mortgage, and houses without Vines will face those growers after the war. It is worth while mentioning that Tomato growing in vineries does not pay in Belgium as it does in England.

What about the Ghent horticulturists? Although no nurseries were destroyed, their situation is no better than those already mentioned. The Belgian plant industry is absolutely dependent on exports, and produce worth about 15,000,000 frs. is sold abroad every year. A very small amount of trade was done last season with Allied and neutral countries, but the traffic was exceedingly difficult and expensive. All packages had to be taken to Holland,

shifted and reshifted from boat to boat, sometimes delayed through lack of convenience, sometimes, too, because the formalities required could not be fulfilled in time. It is well known that several consignments were lost in harbour because the permits for import could not be obtained soon enough.

Export to neutral countries is allowed by Great Britain under the condition that the money is kept in an English bank until the end of the war, but at the same time the Germans compel the exporter to bring the money into Belgium. In such circumstances consignments to America and Scandinavia are made impossible, for nobody is able nowadays to pay twice for what he buys. As regards sales to Allied countries, it should be mentioned that the British Government recently stopped all imports of plants.

What is then to become of the Ghent nurseries? It is obvious that they have to keep their stocks too long, spending money and labour on them, while many plants lose their value. The raising of new plants is almost impossible. Not only will the Ghent people have

what will prove most wonderful is the way in which the most distressed have courageously fought against odds.

2nd. Both vegetable and Grape growers use large quantities of seed, the latter for their catch crops in winter. As mentioned above, most of these seeds come from abroad. It would give most satisfactory results if they could be supplied, as soon as hostilities come to an end. England and France have important firms dealing in vegetable seeds, and the supplies could easily be taken from those countries. This would be at the same time a means of supplanting the German seedsmen, to whom the prolonged absence of English and French firms is giving an easy opportunity to get hold of the customers.

3rd. In plant nurseries seeds are also needed, or young plants, such as *Kentia*, to be found, for instance, in England, and *Phoenix*, which used to be obtained from southern Allied countries. Stocks of these would allow Ghent nurserymen to fill their houses without delay.

4th. In fruit tree nurseries stocks will require replenishing. Stocks of Apples, Pears, and

NEW CHINESE PLANTS.

PRIMULA SILVICOLA.

On the western frontier of Yunnan, in the hills and valleys adjacent to Upper Burma, are found several species of *Primula*, having close affinity in characters and habits with species of the Himalayan groups. A few of these are *P. pseudo-sikkimensis*, *P. sinolisteri*, *P. sinopurpurea*, *P. sinomollis*, *P. indobella*, and *P. silvicola*. All are plants of some horticultural merit, and most are in cultivation.

Primula silvicola, like *Primula sinomollis*, to which it most nearly approaches, is a woodland plant affecting shady sheltered situations under scrub on banks facing south, or on the margins of forests, at an altitude of 6-8,000ft., the soil generally a rich, clayey loam, moderately moist. The plants form small groups and masses, and, with the dark greenery as a background, the rich colouring of the flowers is most effective.

The average height attained is from 15 to 24 inches, occasionally even more. The foliage is of the *Mollis* type, but never so coarse nor of such size, elliptic-cordate or sub-retund, 6 to 8 inches by 4 to 5 inches. All parts of the plant are densely coated with soft, short hairs.

In the wild state from three to six or even more scapes may be produced by a single plant, each bearing up to ten whorls of six to nine blooms. In cultivation, however, this is much exceeded, specimens having been grown which gave a greater number of scapes, each bearing as many as fifteen to seventeen whorls.

The corollas are large, fully three-quarters of an inch in diameter, of a soft shade of purplish-rose with the eye yellow; the flowers are fragrant.

Of recent introduction—the species was discovered and seed secured in 1913—it has proved hardy in half sheltered situations in the open at Edinburgh and elsewhere. The stock is held by Messrs. Wallace and Co., of Colchester, by whom the species was exhibited last year. *George Forrest, Broomhill House, Lasswade, Midlothian.*

VEGETABLES.

OF AUBERGINES.

If one may judge by the ignorance of friends and visitors, the Aubergine is hardly known among us; some few know it as the Egg plant—a foolish name except for the short, white, round variety—some few who have met with it abroad seem surprised that it can be grown in this country. Yet when well cooked what more palatable addition to the late summer vegetables can be found? One disability under which the plant suffers is that the right varieties for our climate are not obtainable except from abroad. Anyhow, it is sluggish in growth, and the ordinary "long purple" of the seedsmen takes up a deal of room. Even the "extra early long purple" of Vilmorin I find too large and too slow in maturing. There are, however, dwarf and early sorts which prosper better, and can be grown well out-of-doors with the aid of cloches in our climate. The two sorts which I have grown now for a number of years are Vilmorin's "Violette naine très hâtive" and "Tokio," both of which are suited to cloche culture or the unheated greenhouse; the latter, in my case, has Tomatoes next the glass, and Aubergines and Paprika Chilies within, with generally a plant or two of a special "green corn" maize for seed. Owing to the slowness of growth it is preferable to start the seeds early in heat even with these precocious varieties, but my experience is that from last year sowings at the end of March without other source of heat than the sun's rays a crop of fruit was obtained and ripened. When the seedlings have developed some two leaves beyond the seed-leaves they are pricked out. All through



[Photograph by George Forrest.]

FIG. 139.—*PRIMULA SILVICOLA*: A NEW CHINESE SPECIES.

lost the years of the war, but later on many houses will be depleted of saleable stock. I should not be surprised if they prove to be amongst those who have suffered most through the conflict.

In my opinion, relief could be afforded in several ways. Something could be done by promoting and facilitating exports, but this rests on the international situation, and is a matter for the Allied and enemy Governments. The help I suggest is only to be given after the war.

1st. Those nurseries which were destroyed will have to be rebuilt. This will be particularly the case around Malines. However, partial repairs have been made in most cases, and it will be necessary to investigate the damage done, which is much more important than would be judged at first sight. Those people who did not allow themselves to be overwhelmed by misfortune, and who set to work again as soon as the storm had passed, expending their savings or the money they had been able to obtain from elsewhere, deserve more consideration than those who gave way to despair. And we feel sure that

Plums for grafting are in normal times obtained from France, but do not arrive during the war. There also help could be given, and if such young trees were brought to the local centres of production, relief would at the same time be given to other Allied horticulturists.

5th. Artificial manures, and, in particular, nitrates, will be wanted in large quantities.

6th. Grants to enable the co-operative marketing societies to reorganise their work and extend their activities, may also prove an effective mode of assistance. The scheme of the R.H.S. to send a small commission of experts after the war to distribute aid is an admirable one, and I can assure all who are so generously contributing to the fund that the Belgian Government will do all in its power to help the R.H.S. in the judicious application of the relief fund.

Finally, allow me to say how grateful Belgian horticulturists are for the promise of help, and how much they appreciate the assistance which is being given by the Ladies' Committee of the War Allies' Horticultural Relief Fund. *H. Van Orshoven.*

a good, rich compost should be used, and water should not lack. Later waterings with dissolved artificials are beneficial if not indispensable. When finally planted out in the greenhouse daily sprayings or wettings are needed to ward off two bad pests—red spider and thrips—and should signs of their presence be seen more active measures must be taken by the use of some suitable agents. Insufflations of precipitated sulphur and spraying with about 2 per mille pyridine are apparently useful, but the former is not complete protection against mildew, which may cause young fruit to miff off, and which, in the chill of autumn, attacks the wood. I have also used lysol and other proprietary washes. Where the young plants are put out under cloches, it should be noted that they do not object to a stuffy atmosphere, and I find it best to leave the cloches without ventilation until the first blossoms appear, then the ventilation is given. Eventually the glasses must be pegged up on notched pegs some 7 or 8 inches from the ground. Under cloches I have not had trouble with red spider or thrips, also the plants seem more resistant to the mildew than in the greenhouse, but the ripening is delayed. In regard to pruning, it is usually advised to pinch above the second flower, neglecting paired blossoms; both for cloches and in the greenhouse the plan of training three main branches seems to be convenient and prevents undue crowding of the branches. Besides being used for immediate consumption, the ripe fruits may be sliced and strung on twine and dried in a warm, dry place, "somewhere in the kitchen," and subsequently used in stews, etc. Immature fruits at the end of the season may also be utilised for pickle-making. In saving seed, selection of good fruit should be made from which when sliced transversely a sufficiency of seeds may be raked out with a small spoon ere it is handed over to the "chef de cuisine." With regard to cooking, besides simple frying or stuffing, reference to the works of such gastronomes as Escoffier or Urbain Dubois will reveal many possibilities; after all, the cookery book is one of the most essential adjuncts of the "jardin potager." *H. E. Durham.*

MANURE AND HOUSE-FLIES.

HOUSE-FLIES are now reappearing, and they are seeking suitable breeding grounds. Within the last year much has been written and demonstrated to impress upon the public the mischief and danger for which certain flies are responsible. Appeals have been made to the nation to check the increase of disease-transmitting flies, and the results of Professor Maxwell Lefroy's investigations are of much practical value. That attention should be given to the breeding grounds of flies is of the highest importance, and this is a matter which concerns every grower, since the favourite breeding place is the manure heap. House-flies are attracted to fresh stable and farmyard manure, and the eggs are laid in the warm, moist spots of the heaps.

It is certain that such piles of dung yield many millions of flies annually, and from now till the end of September all heaps should be made fly-proof. Spreading it on the land to prevent fermentation will safeguard it against fly attack, but by so doing certain manurial properties are lost.

Fly maggots wander about in the manure, and many of them leave it when they are ready to pupate, and burrow into the ground, under and around it. By taking certain precautions and by a very simple treatment, maggots in the manure can be destroyed, and their escape from it prevented.

Used at a strength to kill the maggots, the treatment prevents the visits of female flies, and, while rendering the manure unsuitable for fly breeding, it is absolutely harmless to plant life.

Many tests were made last summer, the experimental heaps were of all forms and sizes, various methods of application were adopted, and the practical difficulties of growers were always kept in view.

For small quantities of manure it is advisable to proceed in one of the following ways:—

1. Thoroughly spray the manure as it is being moved from the stable, or within four days, with a 5 per cent. solution of a tar oil (e.g., Cresol) which mixes with water. Use this at the rate of one quart to 8 bushels (ten cubic feet) of manure, and spray so that the liquid gets distributed throughout.

2. Adopting the same method as No. 1, use Westoran (emulsifiable Tetrachlorethane) instead of the disinfectant, in a 5 per cent. solution (2 ozs. to 1 quart per 8 bushels).

3. Use Westoran in the same strength as for No. 2, but apply it by pouring into a hole in a central position of the pile and cover in the hole.

4. Use pure Tetrachlorethane, adopting the same method as for No. 3, using 2 ozs. per 8 bushels of manure.

For large quantities, the most reliable method is first to sprinkle the ground which the manure is to cover (unless it be concrete or stone) with green oil or with neutral blast furnace oil, or dress it with a mixture of oil and earth, in the proportion of one to forty, to form a thin layer. Cover the surface of the manure with a one-inch layer of the same mixture. One gallon of oil with five bushels (forty gallons) of earth will cover eleven square yards. Every addition made to the heap, together with new ground covered, must be similarly treated.

Mixing the Oil and Earth.—Measure the earth and pile into a cone, make a depression at the top, and pour in the oil, then with a spade mix them by the "cone and quarter" method, which is as follows:—First halve the cone, then quarter it, turn each quarter, and mix together. By this process the oil will become evenly incorporated with the earth, and this is essential, as soil which is not bound by the oil will be washed off by rain or blown away by the wind. If the mixing be done by two people, one turns while the other gradually pours the oil. To prevent the escape of the oil downwards (if on a soil foundation), the cup must be shallow, the flow of the oil regulated, and the turning continuous.

The great advantage of the tar oil surface treatment is that the oil is non-miscible with water, therefore one application is sufficient.

When "long" manure is being treated, it is necessary to make a smooth, even covering of oiled earth; if the straw projects, the flies have access to the manure, the gaps providing exits for flies emerging from any puparia which happen to be there. But "short" manure may be lightly sprinkled with pure oil, using one gallon to every eleven yards of surface.

The manure heaps to be treated should be built with the sides sloping at an angle of about 45°. The soil dressings will not rest on a vertical surface, though the slope is immaterial for the vapour treatments (Tetrachlorethane, etc.). Besides being an efficient insecticide, the tar oil surface treatment combines simplicity of application with cheapness.* When once dumped, the manure need not be disturbed, and the oil is applied with the minimum amount of labour.

Manure may contain fly eggs before it is removed from the stable, and a heap consisting of a few days' accumulation may hold maggots of various ages. When a maggot is fully grown, its one desire is to rest in a cool, dry spot; therefore the final position may be the outer borders of the manure, or, where resting on soil, under and around the heap. It is evident that unless some-

thing to arrest the fly in all its stages be applied to manure at the right time and in the right place, the insects will escape as full-grown larvae or as flies.

If the treatment be a vaporisable substance, it must act quickly enough to kill the maggots before they have time to escape. If the treatment be a surface one, it must be applied while the manure is fresh (within five days), in order to trap the maggots.

The complete treatment is undoubtedly one which entirely encloses the manure. Neglect of a soil foundation will provide a means for the escape of the maggots. Moreover, a border three or four feet wide around infected manure should be treated, as maggots can migrate such a distance to pupate in the ground, and they are all the more likely to do so if the manure itself is doctored.

SOME EXPERIMENTS ON MANURE TREATMENTS.

1. Manure in five feet cubes (125 cubic feet) for vapour treatment.

Into the centre of each cube $5\frac{1}{2}$ gallons of liquid was poured. Five per cent. solutions of Westoran and Pyridene were tested. All the maggots present in the manure died in 24 hours. The vapour diffuses slowly from the centre throughout the heap; the warmer the manure the more quickly the vapour escapes. Although its effect is somewhat lingering, it spreads quickly enough to kill the maggots before they could escape.

2. Manure on seven feet squares, with sloping sides of three feet, and a three feet square top, covered with a mixture of oil and soil, as explained above. Green oil and neutral blast furnace oil were used. In three days all the larvae were dead in the treated heaps, and in six days the control (untreated) heap contained large maggots, while the treated heaps remained immune.

3. Manure on four-foot squares, rising eighteen inches in the centre, was treated with oil and soil. Oil was lightly sprinkled over the base and the border before building up the manure for No. 1. Then the manure was lightly dressed with a one-inch layer of oiled soil. No. 2 had the surface treatment only. It was found that where the soil underneath the manure had been treated, no pupae were present in it, but where it had been omitted pupae were found under the heap, as in the control.

4. In the fourth experiment the manure was on a base $6\frac{1}{2}$ feet square, rising three feet in the centre. Oiled soil was spread over the surface. In areas of about 95° F. all larvae were dead except in the control heap. In five days the control heap was infected.

SOME EXPERIMENTS WITH PLANTS AND TREATED MANURE.

At the Royal Horticultural Society's Gardens, Wisley, Messrs. Sutton and Sons' Trial Grounds at Reading, and at the Horticultural College, Swanley, the treatments were tested on plants.

Very accurate and repeated experiments showed that Melons, Cucumbers, various pot plants, and plants in the open will thrive in treated manure used in the ordinary way.

Thus Melons, Cucumbers, Turnips, and Beans will yield normal crops, while Mustard, etc., grow to maturity, and in every way compare favourably with crops grown alongside on untreated manure. At Messrs. Sutton's the oils and Tetrachlorethane were tested on Mustard in plots, this being a quickly growing crop.

At Wisley and at Swanley:—

1. Melons and Cucumbers were planted in French frames, each plant on one cubic foot of manure.

The treatments per ten cubic feet of manure were:—

(1) One quart (40 ounces) of 5 per cent. solution of Westoran.

(2) Two ounces pure Tetrachlorethane.

* Green oil and neutral blast furnace oil can be obtained from tar distillers and gasworks at 1s. per gallon for large quantities. The treatment, exclusive of labour, for the ground and the surface of the manure is 2d. per cubic yard; the value of manure is 1s. 9d. per cubic yard.

(3) Green oil and soil, one to forty.

Normal crops were produced.

2. Melons and Cucumbers were grown in pots in equal parts of treated manure and loam, with no ill effects. All were equal to the control.

3. Mustard grown in pots from seed to maturity, using the same mixtures as for Melons and Cucumbers.

Trapping flies in the adult stage is very difficult, partly because of their power of flying long distances, and partly because the physiology of these sense organs is not completely understood.

STAPHYLEA COLCHICA.

The fine bush of *Staphylea colchica* illustrated in fig. 140 is growing in Kelsey Park, Beckenham, Kent. The superintendent, Mr. W. H. Jenkins, forwarded the photograph with the following remarks:—"The tree is 20 feet high and 12 feet through. The first flowers opened this year on April 30, being six days in advance of last year. For several weeks past the tree has been smothered with blossoms, and is a great



The Week's Work.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to LADY WANTAGE, Lockinge House, Wantage, Berkshire.

ZONAL PELARGONIUMS.—Plants intended for winter-flowering should be placed out-of-doors in a position fully exposed to the sun, the pots plunged in a bed of ashes. Water the roots carefully until they have filled the pots, when liquid manure and soot-water should be used, increasing the strength of the stimulants as the season advances. Pinch out the points of the stronger shoots and remove the flower-buds until the plants are required in bloom.

PLUMBAGO ROSEA.—Plants of *Plumbago rosea* which were propagated from cuttings in the spring are ready for transference to their flowering pots. Let the receptacles be well drained in order that water may pass freely through the soil. Feed old plants liberally with stimulants, and give them every encouragement to grow freely during the summer. Syringe the shoots freely with rain-water, and keep the atmosphere moist by damping bare surfaces in the house in warm, sunny weather.

CLERODENDRON FALLAX.—Seedlings of *Clerodendron fallax* should be repotted when they need larger receptacles, for neglect in this matter would cause a check to growth that might cause some of the lower leaves to drop. Well-grown plants should be flowered in 7-inch pots. A suitable compost consists of a mixture of good fibrous loam, leaf-mould, manure from a spent Mushroom-bed, wood ash, and coarse sand. Newly-potted plants need extra care in watering; when the pots are filled with roots they should be fed liberally with stimulants. The leaves grow large, and the plants need plenty of room. At the final stages of growth keep the atmosphere cooler and drier than hitherto.

SALVIA SPLENDENS.—Plants of *Salvia splendens* are ready for their final potting. Use a rich compost and pot firmly. Stand the plants in a sheltered situation out-of-doors, and, for preference, where it is sheltered from the full glare of the midday sun. Attacks of red spider must be guarded against by vigorously syringing the plants in the afternoons, and, as a further precaution, spraying occasionally with an insecticide.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady NORTHCOTE, Eastwell Park, Kent.

PLUMS ON WALLS.—Plum trees on walls are growing rapidly, and should receive early attention. Fasten to the wires all shoots required for extension, and those intended to replace worn-out branches, pinching the remainder at the fourth or fifth leaf. Allow the weaker shoots to remain for the present, stopping them if required when they are a little stronger. Guard against infestations of aphids, spraying the tree with an insecticide as soon as the pest is detected. Thin the fruits of choice dessert varieties to a moderate number, but as it may be expected that many fruits will drop during the stoning period, the final thinning must not be done now. Drought at the roots causes Plums and other stone fruits to drop freely, and must be guarded against by watering the soil copiously when moisture is necessary. In certain soils young Plum trees grow very strongly, and this habit manure only accentuates. Train the shoots of such trees thinly, removing entirely gross growths that would tend to upset the balance of the tree.

DESSERT CHERRIES.—The fruits of the earliest varieties of dessert Cherries are swelling rapidly. The choicer kinds include Bigarreau de Schreken (a very fine early black sort), Black Tartarian, Black Heart, Early Rivers, and Guigne d'Annonay. Cleanse the trees thoroughly before placing the netting in position to keep birds from the fruits. Insecticides should not be used for this purpose when the trees are carrying ripening fruits. Shoots that

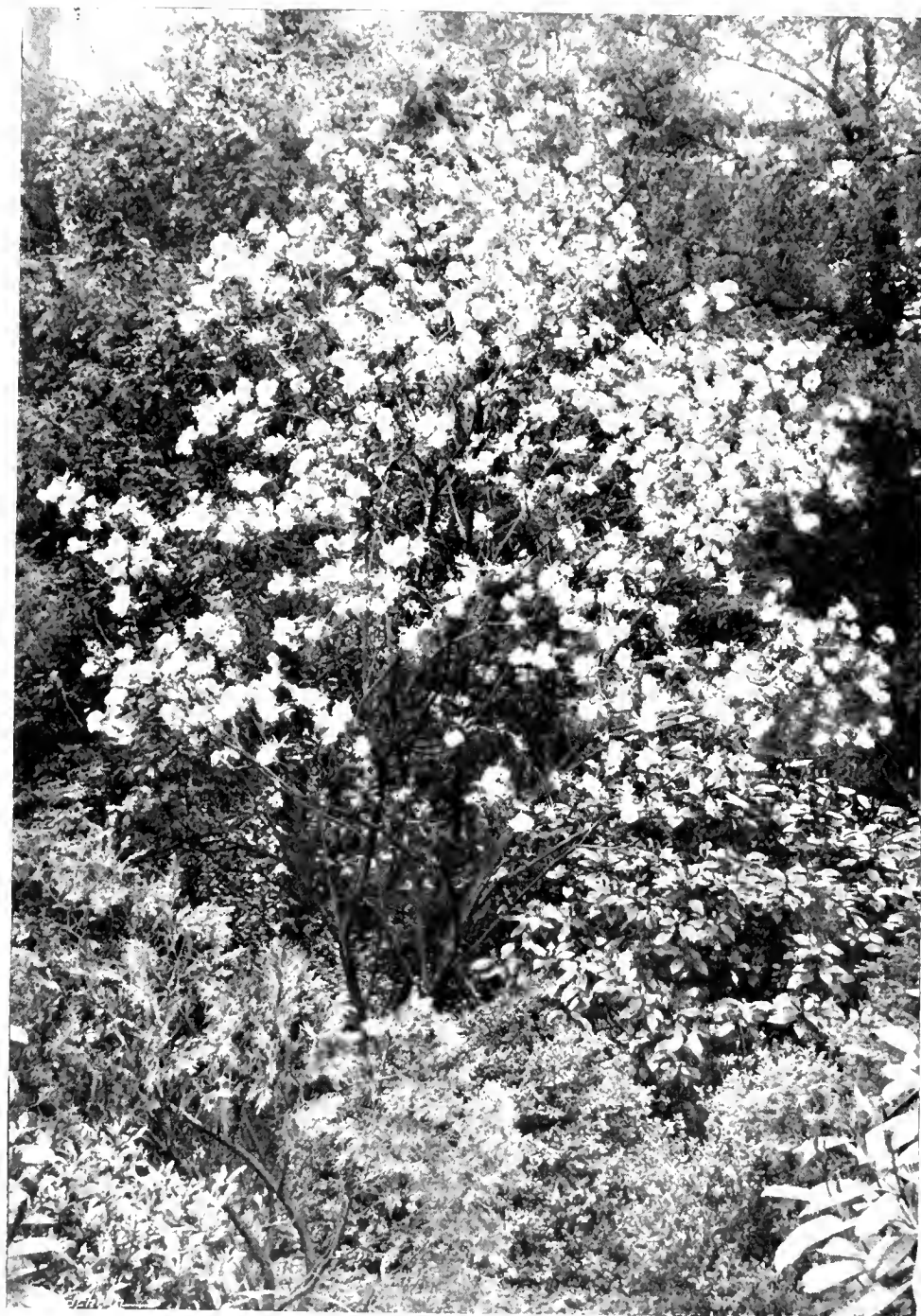


FIG. 140. STAPHYLEA COLCHICA IN KELSEY PARK, BECKENHAM.

It is therefore obvious that the immediate method of attacking the house-fly (the "typhoid fly") is to check propagation by disinfecting, poisoning, or destroying all refuse and manure. The treatments are of very great value in intensive culture. Unless precautions are taken French gardens are likely to yield flies as freely as the unprotected dung heap, and it is hoped that such unhygienic conditions will not long continue to escape the notice of sanitary authorities. Winifred H. Saunders

attraction to visitors. It is growing near the edge of a large lake, where it is sheltered by a belt of trees from the east-north-east. It would be interesting to know of larger specimens in the country."

Staphylea colchica was first figured in the *Gardeners' Chronicle*, January 25, 1879. It is a native of the Caucasian provinces to the east of the Black Sea, and differs from *S. pinnata*, the common Bladder-nut, in its wider leaflets, larger flowers, spreading sepals, and smaller seeds.

need tying or stopping should be attended to before netting the trees. Syringe all parts of the trees with clear water on fine afternoons. If pinching of the young growths is done systematically the trees will need but very little pruning in winter, and this is an advantage, for the free use of the knife is often followed by gumming, and the loss of large branches from otherwise healthy trees. Very strong growths should be removed entirely.

PEACHES AND NECTARINES.—If the trees of Peach and Nectarine have been disbudded the shoots should be tied or nailed in position. Keep the shoots trained evenly apart, for they may be needed to take the place of this year's fruiting wood when the fruit is gathered. Pinch out all lateral growths as they develop. Syringe the trees daily in fine weather to keep down attacks of red spider and other insect pests. The fruits are swelling fast, and where crowded should be lightly thinned, removing first all badly placed specimens, following up by thinning the crowded branches. The final thinning should not be done until after the stoning period. See that the trees do not suffer from dryness at the roots, as a check to growth would cause the fruits to drop. Trees that were transplanted last season should be watched closely. In hot, dry weather water the roots occasionally to keep the wood plump and the shoots growing. If not already done, apply a mulch to the trees, and give those bearing full crops a dressing of well-rotted farmyard manure, afterwards watering to wash the manurial properties down to the roots. Young trees should not receive heavy dressings of manure, but material of a less stimulating nature as a mulch, for young, healthy trees invariably grow sufficiently freely in rich soil.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

STANHOPEA.—The principal species of Stanhopea in cultivation are *S. tigrina*, *S. Wardii*, *S. oculata*, *S. eburnea*, *S. Ruckeri*, and *S. inodora*. On account of the pendulous growth of the flower-scapes, the plants should be grown in Teak-wood baskets, and instead of broken crocks, a thin layer of peat rhizomes should be employed for drainage. After the flowers are over growth begins afresh, and when the new shoots have developed a few inches repotting may be done or fresh soil afforded. The rooting medium should consist of Osmunda or AI fibre three-parts, and Sphagnum-moss one part. The soil must be made fairly firm. Keep the roots only just moist until they are re-established, but afterwards they may receive a liberal amount of water. Plants that are not repotted should be afforded copious supplies of water until the pseudo-bulbs are fully developed. Keep the atmosphere moist all through the growing season, and spray the foliage lightly when the weather is favourable. The plants should be rested in a cooler house, and the atmosphere kept fairly dry, while only sufficient water is needed to keep the pseudo-bulbs plump and rigid. The leaves are occasionally attacked by red spider; wash the foliage at intervals with an insecticide to keep the pest in check.

CORYANTHES.—Coryanthus somewhat resembles Stanhopea, and requires much the same treatment. Both *C. maculata* and *C. macrantha* flower in summer. They should be grown in a warm house throughout the year in Teak-wood baskets.

GONGORA.—In general habit Gongora bears a resemblance to Stanhopea, but the flowers are not so large. *G. atropurpurea*, *G. truncata*, *G. quinquenervis*, and *G. Scaphophorus* may all be grown in pans or baskets suspended from the roof-rafters of the intermediate or Cattleya houses. Fresh soil should be afforded the plants when new growth commences.

HOULLETTIA.—Houllettia is a small genus, of which two species are in general cultivation. *H. Brocklehurstiana* and *H. odoratissima*. The pseudo-bulbs are small, and they bear a single, large leaf, which necessitates the plants being grown on the staging. A house having an intermediate temperature should be chosen for these Orchids. Re-potting should be done directly

growth commences; the compost should consist of Osmunda-fibre or good fibrous peat three-parts, and chopped Sphagnum-moss one-part. When growth is completed water the roots sparingly.

NEOMOOREA IRRORATA.—This monotypic genus is closely allied to Houllettia. The plant should be grown in a mixture of Osmunda-fibre, peat, and Sphagnum-moss, with a little fibrous loam added. Well-rooted plants need liberal supplies of water, but when the pseudo-bulbs are matured they should be rested by withholding moisture, but not to the extent of causing the pseudo-bulbs to shrivel. When the plants are growing actively they should be in a light position in a warm house.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

WINTER TOMATOS.—The present is a suitable time to sow seeds of Tomato to raise plants for cropping early in winter. Sow several seeds in the centre of a 3-inch pot filled with fairly rich, moist soil. Place the pots in gentle warmth and cover them with paper to exclude the light and prevent the escape of moisture. When the seedlings are large enough to handle remove all but the most promising one from each pot, transfer them to a cold frame, and harden them gradually for standing in the open. Aim at getting strong, sturdy plants by growing them without a check. They should be re-potted as soon as the pots are filled with roots, and again if necessary, even if they are eventually to be grown in borders. Winter Beauty and Early Market are suitable varieties.

POTATOS.—In many cases the planting of Potatos was unduly prolonged by adverse weather and labour shortage, but the plants will grow rapidly from now. Stirring the soil between the rows and earthing up as the plants need this attention must not be neglected.

PEAS.—In some gardens it is not too late to sow mid-season and late Peas with hope of success. Gladstone or a variety of the same type should be chosen. Sow in deeply-cultivated soil, then the roots will have a larger area in which to draw supplies of moisture in times of drought. Those in districts not suitable for sowing late varieties now should select early and second early sorts; early dwarf varieties are often a success sown in July.

TURNIPS AND OTHER ROOTS.—Continue to sow successional batches of Turnips, Swedes, and Kohl Rabi. The last crop needs extra attention while in the seedling stage, as the Turnip beetle has a great liking for the plants, whilst in wet weather slugs will eat them in preference to other Brassicas. Frequent dustings of soot or some other distasteful or gritty substance is recommended to keep the Turnip fly in check, also spraying with paraffin emulsion.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady NUNBURNHOLME, Warter Priory, Yorkshire.

VINERY.—Vineries containing ripe Grapes must be kept cool and airy, for the berries of black varieties soon lose their colour unless the foliage is healthy, whilst those of white varieties greatly improve in quality by full exposure to sunlight with a circulation of air. After the Grapes are cut let the Vines have careful treatment for the rest of the season. Red spider soon destroys the best leaves, hence the importance of using the syringe freely and watering liberally. A few laterals may be permitted to remain to assist the main buds, but they should not grow to such an extent as to shade the main leaves. Later vineries, in which the Grapes are approaching maturity, should be ventilated freely, less fire-heat should be employed, and the amount of atmospheric moisture reduced gradually. Do not allow the roots to become even partially dry, for this is one of the most common causes of cracking in such varieties as Madresfield Court. If the laterals have been allowed to grow freely, the stronger ones may be shortened by degrees, leaving the weaker ones intact to keep the sap in

motion. If red spider appears on the leaves do not syringe the Vines, but paint the water-pipes when they are hot with sulphur. Keep the house dry and cool until the pipes are hot, when the ventilators should be closed for the night, admitting air very early the following morning. Possibly a better plan is to dust the infested leaves with dry sulphur. Late vineries containing Lady Downe's and other winter Grapes should be closed early in the afternoons when the temperature is high. The atmosphere should be kept moist and the floor damped with diluted liquid manure. Inside borders that are well drained can scarcely be overwatered at this stage. If the Vines are weak or heavily cropped they may be given stimulants, such as guano-water, soot-water, or a light dressing of Vine manure at short intervals. Watch closely for scalding, to which Lady Downe's and Muscat varieties are subject, especially during unsettled weather. This trouble is best obviated by keeping the water-pipes warm at night, so that ventilation will not cause the berries to get cold enough to condense moisture, giving liberal ventilation through the day, and keeping the roots active in warm, well-drained borders. These late Grapes need to be thinned liberally, as they are required to keep well in winter when decaying leaves are falling and fogs prevail. Medium-sized bunches, through which the air passes freely, keep best; a few large bunches may be grown for special purposes, but medium-sized bunches have generally finer berries that colour well.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES.

PENTSTEMON.—The Pentstemon promises to become almost as popular as the Antirrhinum; it is not a difficult plant to cultivate, and, being propagated mainly from cuttings, may be relied on as to colour. But it does not flower so profusely as the Antirrhinum, although the blooms are of a more imposing appearance. Better plants and finer flowers are obtained by setting the plants out before the spring bedding plants are past flowering. Planting should be done in April or the early part of May, and the soil should be well cultivated and liberally manured for a previous crop. The hoe should be used freely between the rows and the plants for as long as there is sufficient room to use it. The present is a good time to choose new varieties, to reject old ones, and to make notes generally. Middleton Gem, Newbury Gem, and Southgate Gem should be included in all collections.

SWEET PEAS.—Plants in flower should be given a little stimulant, either liquid manure or a special Sweet Pea manure. The latter should be dusted along the rows or about the clumps, the soil lightly hoed, and afterwards watered. Failing artificial manures, soot may be used as a dressing. The application of manures with the object of forcing the plants into flower invariably causes dropping of the flower buds; if the soil was well prepared before planting it should contain sufficient nutriment for the plants until they have to bear the strain of many flowers. It is important to gather the flowers as they mature, for if pods form it will be at the expense of more blooms. To obtain specially fine flowers for exhibition or table and house decoration, pinch out the side growths, remove the tendrils, and tie the growths in position. Sweet Peas which are not disbudded will furnish a supply of long-stemmed flowers over a long period if the blooms are picked regularly, the roots fed with suitable fertilisers, the soil kept uniformly moist, and a thin layer of loose soil maintained on the surface by hoeing.

IRIS.—The best time to transplant varieties of the germanica type is after flowering. The plants need to be transplanted every three or four years. If the ground is trenched and enriched with plenty of leaf-mould and well soaked with water Irises that have been divided will flower better the following year than they did before their removal. Varieties which have done well in a naturally heavy soil (in addition to the old Blue Flag, which is found in many cottage gardens) are: Incognita, Flavescens, Mdme. Paquette, Darius, Dorothea, Odin, Dolphin and Italia.

EDITORIAL NOTICE.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Letters for Publication.—as well as specimens of plants for naming, should be addressed to the EDITORS, 41, Wellington Street, Covent Garden, London. Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 20—

Roy. Hort. Soc. Ooms. meet. (Lecture at 3 p.m.)

WEDNESDAY, JUNE 21—

Royal Meteorological Society meet.

Croydon Hort. Soc. Flower Show.

THURSDAY, JUNE 22—

Horticultural Club's visit to Friar Park, Henley.

Roy. Jersey Hort. Soc. Rose Show.

FRIDAY, JUNE 23—

R.H.S. Floral Committee visit Wisley.

SATURDAY, JUNE 24—

Windsor Rose Show.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58.5°.

ACTUAL TEMPERATURE:—

Gardeners' Chronicle Office, 41, Wellington Street, Covent Garden, London. Thursday, June 15 (10 a.m.); Bar. 29.5°; temp. 58.5°. Weather—Dull.

SALES FOR THE ENSUING WEEK.

WEDNESDAY NEXT AND FOLLOWING DAYS—

The whole of the collection of Orchids formed by the late J. Gurney Fowler, Esq., at Brackenhurst, Penbury, near Tambridge Wells, by Protheroe & Morris.

Fourteen years before the publication of the first volume of this new and comprehensive work, the Editor, L. H. Bailey, wrote the preface to Vol. I. of the *Cyclopædia of American Horticulture*, which ran into four large volumes, and resembled an American version of Nicholson's *Dictionary of Gardening*, which constituted a distinct epoch in the history of gardening dictionaries. All three of the books under consideration are encyclopædic in character and something more than mere dictionaries. The work now under publication, founded on the previous compilation, is described as a new work with a larger scope. The older work has gone through several editions, but will no longer be published. The new one includes more of the members of tropical floras, to embrace that of the warmer parts of Florida, Porto Rico, and to some extent Hawaii. It is not confined to the plants cultivated in the United States and Canada, but is intended to include the lists of the principal European dealers, subjects of exchange commercially, and new introductions from China, but not such stray subjects as may be picked up by amateur collectors and transferred to their gardens. The largest extension to the present work consists of trees and shrubs to meet the increasing taste in America for outdoor gardening. The *Standard Cyclopædia* has two purposes as its aim, namely, the identification of

plants and their cultivation. It is intended to be a manual of practice, and in this respect seems to aim at embracing two such distinct books as Nicholson's *Dictionary of Gardening* and Thompson's *Gardener's Assistant*. The territory covered is so extensive, however, and embraces such a variety of climates that it has been found necessary to forgo minute cultural details lest it should breed confusion amongst amateur cultivators owing to a multiplicity of conflicting opinions and contrariety of practice.

The work of identifying and describing genera and species has given no small amount of trouble, especially in the case of Old World plants, because there is no herbarium for reference. Information has been compiled from books and obtained from such experts as could supply it, either in America or on this side of the Atlantic. In matters of cultivation and cognate arts the services of a large number of competent specialists in different subjects have been enlisted, and eighty special articles have been or are being written for the benefit of cultivators and designers. Prof. Bailey hopes that every entry in the book will be worked over and improved within the next quarter of a century; and that the "six volumes will comprise another step in the collecting, assorting and appraising our horticultural knowledge."

A synopsis of the plant kingdom has been prepared by Karl M. Wiegand, the design of which is new to gardening literature, though ostensibly on the natural system. It begins with the Bacteria and blue-green Algae, climbing the scale of plant evolution to Cycads, Ginkgo and Conifers, and thence to the Monocotyledons and Dicotyledons. The latter commence with the Casuarinaceae, with their allies up to Phytolaccaceae, after which the order of arrangement harks back to Portulacaceae, and proceeds by the way of Caryophyllaceae to the Ranales or Ranunculaceae group, which is made to include Lauraceae. There is little room to doubt that Phytolaccaceae, Polygonaceae, Chenopodiaceae, Amarantaceae, and some others are merely monochlamydeous allies of the Caryophyllaceae, and this has long been known to science. The Lauraceae are evidently placed here on account of the anthers opening by pores as in Berberidaceae, but this character is met with amongst some of the Hamamelidaceae. The exalbuminous seeds and straight embryo of the Lauraceae, however, remove the order from the neighbourhood of Berberis. The arrangement ends up with the Campanulaceae. It is doubtful whether this synopsis will gain many adherents on either side of the Atlantic. The key to families and genera proceeds on familiar lines, from Ranunculaceae to Gramineae, and is likely to hold its own for many years, until, indeed, some better plan is formulated.

Only the generic names are arranged alphabetically in the book. The meaning of the generic name is explained, so far as each admits it or has any meaning. This is followed by a botanical descrip-

tion of the genus, as in the *Cyclopædia of American Horticulture*, but it has been amplified or amended so as to be more accurate, comprehensive and applicable, without being discursive. Usually the descriptions are more definitive than in Nicholson's *Dictionary of Gardening*, probably as a result of the experience gained with the older work and the corrections suggested by correspondents. This is followed by a paragraph or two containing information relative to the genus. When the species are numerous they are arranged in groups according to affinity; and the reader is furnished with a synopsis or key, by which he can run down and identify plants that are unknown to him. This is a feature of many modern works on plants, and a good one for those who take the trouble to make themselves acquainted with the method of their author. In large genera, like Acer, the synopsis is somewhat complicated, because capital letters only are used throughout, either singly, in pairs, or threes, to indicate the separate descriptive paragraphs. Small letters and italics to show the descriptions that are subordinate to more comprehensive ones would have caught the eye better.

A glance at some of the larger and more important genera from a horticultural point of view shows the additions that have been made in the present work. In the older book 31 species of Acer were fully described, but these have been increased to 49. In both cases a large number has been briefly described in smaller type at the end of the genus, to indicate their lesser importance. Six varieties of Acer Pseudoplatanus were described in the older work, but they have now been increased to 11. Many of them are listed in the catalogues of nurserymen, but without any intelligible description, so that their beauty and distinctive characters are unknown except to those who visit the nurseries. These Acers are grouped in natural sections, and the key is entirely different from that employed in the earlier work. The fully described species of Lonicera have been raised from 36 to 53, with long lists briefly described in small type. The writers have been less liberal with the species of Achillea, for many of the smaller species that are highly popular in this country for the rock garden are relegated to the unimportant list. Of Begonias 119 species and hybrids are arranged under bulbous, tuberous, rhizomatous and fibrous-rooted types. The garden race of tuberous Begonias is indicated in the aggregate under the name tuberhybrida. Lists of mere garden varieties are entirely excluded from the book, because too transient to be of permanent value for a cyclopædia intended as a book of reference for years to come.

The encyclopædic nature of the book is indicated by the 80 class-articles above mentioned. The article on the Apple has been increased from five columns in the *Cyclopædia of American Horticulture* to 26 pages in the present work, including cul-

The Standard Cyclopædia of Horticulture. By L. H. Bailey. Illustrated with coloured plates, 4,000 engravings in the text, and 96 full-page cuts. In six vols. (four published, 1914-1916). (New York: The Macmillan Company, London: Macmillan & Co., Ltd.) 25s. a volume.

tivation in different States, the history of famous Apples raised in America, monuments raised to commemorate the same, and other statistics. There is a lengthy account of notable North American horticulturists, a feature in which British dictionaries and horticultural books are deficient. The literature of horticulture includes a list of garden books, mostly American, running from page 1521 to 1553. A name list gives the meaning of some hundreds of specific names. The glossary of botanical and horticultural terms will also prove useful, for descriptive adjectives are usually a *pons asinorum* to the beginner who commences with a flora without a glossary.

The system of naming plants and the names used are very closely in accordance with the work of modern botanists in this country, and with our gardening books generally. That some names should have been changed, as a matter of opinion, or to bring them in line with the rules of the Botanical Congress, is almost inevitable, though the reason is not always apparent to the lay mind. Some of the late Asa Gray's work has been discounted. He was responsible for such a combination as *Bryanthus Breweri*, *B. empetrifolius*, *B. erectus*, and *B. taxifolius*, but all have been arranged under *Phyllodoce*. *Clematis tangutica* has been raised to the rank of a species, though usually considered a variety of *C. orientalis* in this country; and there are others similarly treated.

Most of the engravings used in the *Cyclopedia of American Horticulture* have been reproduced in the new publication, some of them reduced, others enlarged. Few of them are of such excellent workmanship as those in Nicholson's work, though the coloured plates and full-page photographic reproductions are more artistically finished and excellent. The book has been carefully edited, and so far we have seen few clerical errors. There will be differences of opinion as to the necessity for or propriety of giving the book a new name. It would have been as useful if described as a new edition. The alterations are considerable and the additions comprehensive. Even in this country it would prove a valuable book of reference.

"RED CROSS" COLLECTION IN THE MARKETS.

—We have already referred (see May 13, p. 259) to a collection that is being made in aid of the British Red Cross Society by the Fruit, Flower, Vegetable and allied trades, of which movement Mr. GEO. MONRO is president, and Mr. H. BAKER, of 4, Tavistock Street, Covent Garden, secretary. The committees responsible for this collection have now sent us a list of the donations received up to June 15. They are to be heartily congratulated on the great success which has already attended their efforts. Beginning with the Spitalfields Markets collection (per E. W. ROACH, secretary), there is one donation of one hundred guineas from Mr. HONNER, and the sum collected in that market amounts altogether to £640. Mr. N. NAYLOR has collected from the growers and salesmen at Newcastle-on-Tyne the sum of £204 7s. Then we find the long list from Covent Garden headed by a donation of one hundred guineas each from Messrs. ELDERS AND FYFFES, LTD., GEO.

MONRO, LTD., W. DENNIS AND SONS, and JESSE F. SMITH; whilst Mr. H. G. WALKER and an anonymous donor give one hundred pounds each. Messrs. JOSEPH ROCHFORD AND SONS, and Messrs. GARCIA AND JACOBS have subscribed fifty pounds each, and so on. The total sum subscribed up to the date given amounts to the handsome figure of £2,753 1s. 10d.

Regent's Park; two other important Rose shows are those of the City of London Rose Society, which will be held in the Cannon Street Hotel on Tuesday, the 27th inst., and the Windsor, Eton and District Rose and Horticultural Society, which will take place on The Slopes, Windsor Castle, on Saturday, the 24th inst. Croydon Horticultural Society is holding a flower

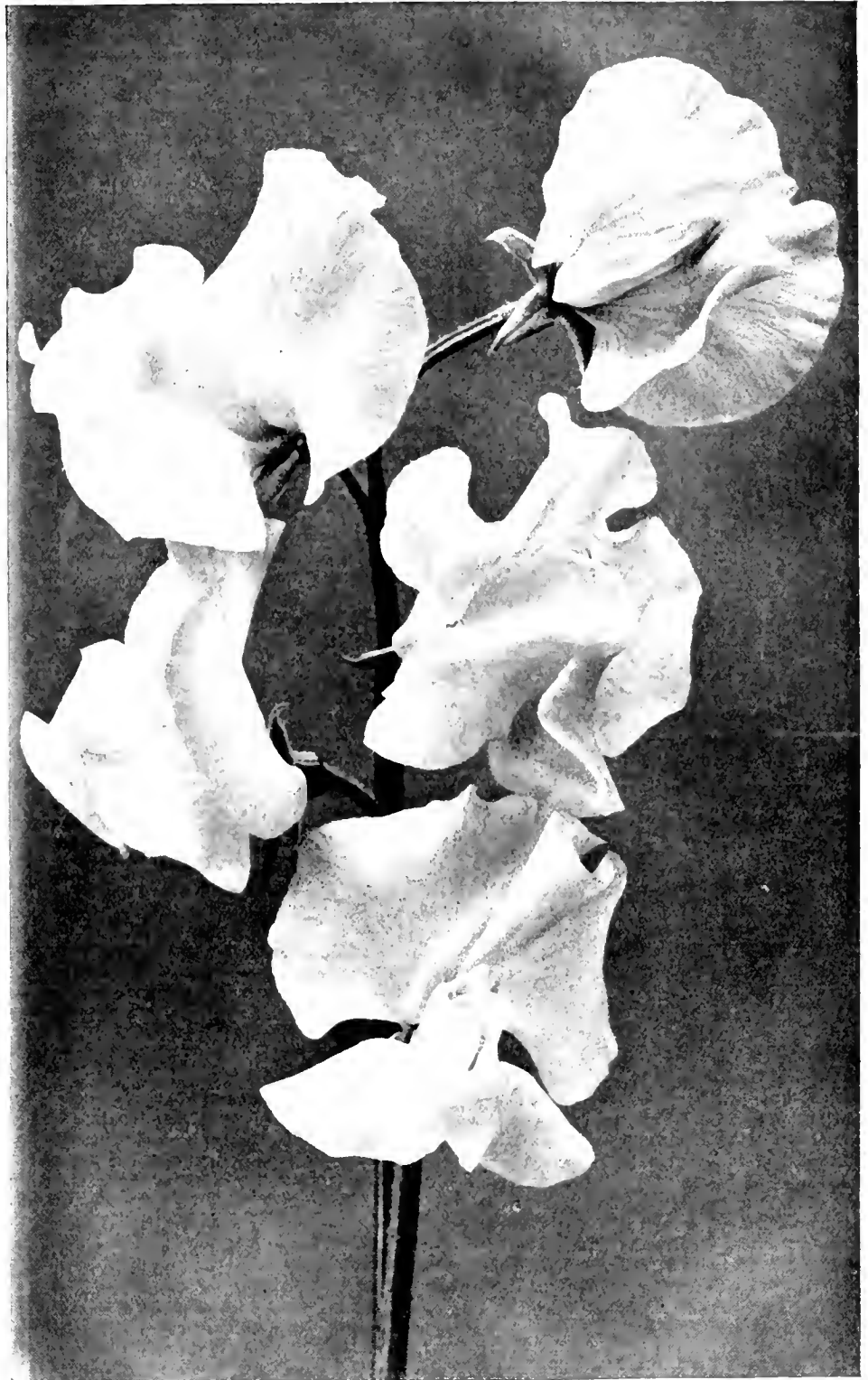


FIG. 141.—SWEET PEA "OLD ROSA."
(See p. 325.)

FORTHCOMING SHOWS.—Although the majority of flower shows have been abandoned, several societies are holding their exhibitions this year as usual, and a few important events are fixed for the present month. On the 30th inst. the National Rose Society's Metropolitan Exhibition will be held in the Botanic Gardens,

show in the Park Hill Recreation Ground on Wednesday, the 21st inst., in aid of the local Mayor's War Relief Fund. The Royal Agricultural Society's four-days' exhibition at Manchester, which opens on the 27th inst., includes a flower show under the direction of Mr. J. E. BLAIR.

Photograph by Thomas Stevenson.

THE RIVIERA FLOWER TRADE.—As was but natural, those engaged in this trade were subject to much anxiety in the early days of last year as to the effects of the war on the saleability of their produce. Reports in the French horticultural press prove, however, that these apprehensions were not fulfilled, and that during last year flowers sold well and at good prices. Though Narcissus and "Mimosa" did not find much of a market, Roses and Carnations fetched good prices. It must, however, be remembered that through shortage of labour the areas under flowers were greatly restricted.

MUSK NO LONGER MUSKY.—At the concluding meeting of the spring session of the Linnean Society the General Secretary communicated a note from Miss LOUISA PERSHORE, Torquay, stating that *Mimulus moschatus* had been observed by her for several years as growing and increasing in running water near Sticklepath, in the neighbourhood of Okehampton, on the borders of Dartmoor; the name was confirmed at Kew. The President, Sir DAVID PRAIN, remarked that this plant in cultivation seems to have quite lost its original musky scent, and that it would be interesting to know if this escape had retained it.

THE WINTER-FLOWERING SWEET PEA.—In an address delivered by Mr. HOWARD M. EARL before the Florists' Club of Philadelphia* the origin of the winter-flowering Sweet Pea is attributed exclusively to the Blanche Ferry, which variety is said to have arisen in the garden tended by a quarryman's wife in Jefferson County, New York, as a sport from one of the oldest varieties of Sweet Pea, namely, Painted Lady. Improvements in the original Blanche Ferry there are, but, according to Mr. EARL, all of them have the "blood" of that strain in them. So also the Telemly Sweet Pea, which originated with the Rev. EDWIN ARKWRIGHT at Telemly, Algeria, is claimed by Mr. EARL, on the authority of the raiser, to have arisen as a sport from Blanche Ferry. The parent of the Telemly race bloomed in February in the Algerian garden of Mr. ARKWRIGHT, and plants raised from seed of that plant flowered yet earlier (in January). Reference is made in the article to Engelmann's early-flowering type, but no account of its origin is given. As is well known, the advent of the winter-flowering Sweet Pea has been of the greatest benefit to Australian florists, for the summer-flowering forms which blossom in Australia in late spring are subject to damage from spells of hot weather and strong winds. The winter-flowering section, which comes into bloom in winter and early spring, finds more congenial weather conditions, and hence enjoys a longer flowering period. The Australian florists have, moreover, contributed to the progress of the flower. Mr. JOHN YOUNG, of Sydney, observed in 1908, among a batch of new summer-flowering Spencers, a plant true to the Spencer type, but distinct from all its neighbours. It was of vigorous habit, upright and early, blossoming when the rest of the batch were only a few inches high, and setting seed before they showed flower-buds. Seeds from this precocious plant yielded early-flowering offspring. Unlike others of the winter-flowering section, this strain (Yarrawa) is extremely vigorous, and in the neighbourhood of Sydney will top a 10 feet trellis, whereas Telemly and American winter-flowerers attain to only half that height.

TIME OF RIPENING OF HARDY FRUITS.—Mr. N. P. HEDRICK has performed a useful service in publishing† lists of varieties of fruits—Apples, Pears, Peaches and Plums, with the dates at which each variety ripens. This bulletin, together with No. 407, which gives the time of flowering of the chief varieties of fruits, should prove of great service to American

growers, and contains records which are valuable to horticulturists all the world over.

A "COPPER LIME" SPRAY FLUID.—It is claimed that a spray fluid cheaper, no less efficient, and of greater adhesive power than ordinary Bordeaux mixture, may be made from copper sulphate and alum, plus freshly prepared milk of lime.* The formula for the preparation of this—Martini's solution—is copper sulphate, 1½ lbs.; alum, 1½ lbs.; fresh burned lime, 2 1-5 lbs.; water, 44 gallons. The alum and copper sulphate are dissolved in part of the water. The lime is slaked and suspended in another portion of the water. The milk of lime is added with constant stirring to the solution of copper sulphate and alum until the mixture gives a distinct alkaline reaction with litmus paper. The rest of the water is then added, and the fluid is ready for use. Although it contains only half the amount of copper contained in Bordeaux mixture, it is said to be as effective a fungicide as the latter.

A NOVEL MOUSE OR RAT TRAP.—The *Queensland Agricultural Journal* for April publishes a sketch and description of an ingenious trap for rats and mice (see fig. 142). A small board is placed with one end resting on the rim of an ordinary pail nearly half full of water, and the other end on the ground. A piece of wire is stuck into the end of the board, three cotton reels strung on the wire, and its end turned up, with the bait fastened on the top. The best bait is a piece of cooked bacon or toasted cheese. The trap has been found very successful, the mice standing on the reels in an attempt to obtain the bait, and overbalancing into the water.

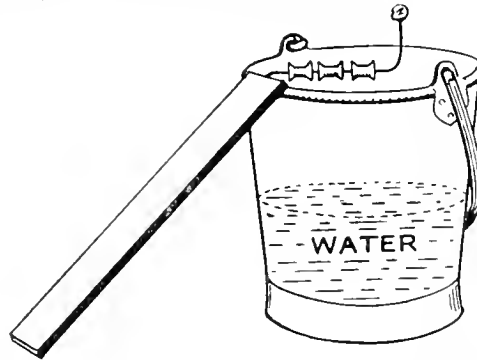


FIG. 142.—QUEENSLAND TRAP FOR RATS AND MICE.

THE EFFECT OF MULCHING ON YIELD OF POTATOS.—A series of experiments carried out by the Horticultural Department of the University of Nebraska, reported on by Dr. R. A. EMERSON,† leads to the conclusion that the deterioration of productiveness of Potatos in that State may be prevented by mulching the crop. Comparisons of the yield from similar seed tubers—one set grown in the ordinary way and the other under a mulch—showed in all cases (ten in number) that that of the former was higher than that of the non-mulched plots. For every 100 lbs. of tubers produced from mulched ground the yield in unmulched cultivated ground was:—62, 68, 70, 70, 76, 80, 82, 83, 83, and 93. Or, taking the average of these last figures, mulched seed yields 100 lbs., unmulched seed 77.2 lbs. Furthermore, the effect of mulching in restoring the yield from Potatos grown for years in the ordinary manner is seen in the first year of mulching. Plants which had been grown for five and six years in the ordinary way produced 67 lbs. against 100 lbs. yielded by these Potatos when mulched. Dr. EMERSON recommends all those who save their own seed to mulch a few rows to provide seed for next year's crop. The mulch should be about 4 inches deep after settling, and may consist of hay, straw, stable litter, or other similar material. It is best applied when the plants

come up, and must be spread by the time the new tubers begin to develop.

WAR ITEM.—We learn with regret that Pte. PHILIP EDWARD MOON, of the 1/6th Seaforth Highlanders, grandson of Mr. F. SANDER, of St. Albans, and son of Mrs. Moon and the late HENRY G. MOON, of the Camp, St. Albans (the talented artist who passed away in the prime of life), was killed by the explosion of a mine in the firing line in France on April 28, at the age of twenty years. He was educated at Dean Close, Cheltenham, and had just matriculated when, young though he was, he joined the Army, and after training left England for the Front with his battalion on May 1, 1915, and from that time was on active service in the most dangerous zone. His Captain, in a letter of sympathy, says: "Philip was a brave soldier and a good lad—one of the best—and he has for a long time had our admiration and love. I will always treasure the memory of him; his great love of Nature and his knowledge of flowers was so wonderful to us all." He was a keen student of natural history, and found much pleasure in sending home specimens of plants gathered near the firing line, and interesting particulars relating to their surroundings. Horticulturists will sympathise with Mrs. Moon, who is known to many of them, and her father, Mr. F. SANDER, who in his advancing years was looking forward to see his grandson well established in the profession which he had chosen.

AGRICULTURAL RELIEF OF ALLIES COMMITTEE.—It has been decided by the local committee responsible for the Royal Agricultural Show arrangements at Manchester that the gift sales for the Agricultural Relief of Allies Fund shall be held on the Wednesday and Friday of the show week, with the possibility of a further sale on the Saturday.

FRUIT PRODUCTION IN NATAL.—The *Journal of the Royal Society of Arts* for June 2, 1916, contains interesting details on the subject of fruit cultivation in Natal. It appears that the advantage possessed by Natal is that all fruit grown in that province is, owing to the character of the climate, earlier than that produced in other exporting areas. The Naartje stands at the head of the 1913-14 season's exports, some 11,000 cases having been exported. It is at the present time the best of Natal's Citrus products. The class of Naartje most largely exported is of the Tangerine type and known generally in South Africa as "the Natal Naartje." It is produced to a large extent in the coastal districts north and south of Durban. Of Oranges, fewer than 1,500 boxes were sent from Natal during the year under review, possibly because coastal growers have in years past received little encouragement either in prices received or in the way their fruit stood transport. With the development of Citrus culture within a radius of a few miles of Maritzburg, it is only a question of time before Natal will take her place with her sister provinces as an exporter of good, well-grown fruit. Minor Citrus varieties include Lemons, Limes and Grape-fruit. No export of these has taken place; a good local demand exists for Limes and Lemons. Grape fruits should find acceptable surroundings in some part of the coast; arrangements were being made for testing them at Winkelspruit. Pineapple cultivation is an expanding industry. Given attention by the right kind of white man its future should be a bright one. Some 2,500 cases were exported in 1913-14, principally of the Queen variety. Cayenne Pines formed 25 per cent. of the whole export. The large size of this fruit, its delicate skin, and large moisture content, render it difficult to transport properly. It is by no means certain that it should not be carried in the cold rather than the cool chamber on board ship. Experiments are being carried out with the object of discovering the best conditions under which to handle these fruits. For the cultivation of the

* *Horticulture*, May 27, 1916.

† *Bulletin No. 408*, June, 1915, New York Agric. Exp. Sta., Geneva, N.Y.

* *Chem. Abstr.*, 1916, 10, 85, and *Pharmac. Journal*, Feb. 26, 1916.

† *Bulletin No. 146*, The University of Nebraska, Lincoln, Nebraska, U.S.A.

Banana the climate, soil and other conditions are nearly all suitable; the labour engaged in the industry is chiefly Indian; and whilst that may not be in accordance with certain principles, the fact remains that the Banana industry of Natal is being well handled. The demand for this fruit is so great in the other provinces of the Union that no attempt has been made to extend the export beyond the confines of South Africa. Mangos and Avocados both do well enough in Natal, but neither has made a success in the export market. Climatic conditions, principally atmospheric, do not appear to be conducive to good carrying of the Mango, and it is only of late that the Avocado has given any encouragement to exporters. With increased care in growing and packing a business in this fruit may eventually arise. It is to be feared that the same cannot be said of the Mango, until the tree is planted further inland.

FORESTRY IN PENNSYLVANIA.—We learn from the issue of *American Fruits* for May that about 10,000 seedling black Cherry trees are to be planted this year, under the auspices of the Pennsylvania State Forestry Department, as part of a general plan to provide food for insect killing birds in the wooded portions of the State. The use of Cherry trees has been decided upon instead of Grape vines, which were sent out on experimental tracts in State reserves last year, and it is calculated that the trees will furnish both timber and food. Many of the trees will be planted along roadsides, to encourage bird life in farming districts, some will be planted on State reserves, and others will be given to individuals who have been working with the foresters and who will permit observations to be made. The trees were raised in the State's nurseries. In addition to planting the Cherry seedlings and experimenting with Grape vines, the State Forestry Department is making tests with various species of trees, which will bear edible fruit for birds in the winter. A new species of Mulberry is the subject of experiment.

NURSERY NOTE.

SWEET PEAS UNDER GLASS.

THE firm of Dobbie and Co. is one of the pioneers of Sweet Pea cultivation indoors, and the manager at Marks Tey (Mr. Andrew Ireland) has mastered all the details probably better than any other grower. Though I have been privileged to see the plants on several occasions, I never managed to see them at their best till early in May this year. It was a feast of Sweet Peas—in a condition in which one could not possibly see them out-of-doors, owing to weather conditions. True, it is not fair to make comparisons between indoor and outdoor grown plants or flowers, so what I may say of the varieties applies to them as seen under glass, and there only.

One thing that has always impressed me is the number of good flowers which this firm is able to exhibit from a comparatively small number of plants; in no case did there seem to be more than a double row 10 to 12 feet long of each variety, but as every plant is in perfect condition, short-jointed and vigorous, it naturally follows that the flowers must also be good, and there is no waste from wind-battered flowers as is the case out-of-doors. Where every variety is good it is difficult to pick out varieties for special mention.

Dobbie's Orange was perhaps the best in the bright-coloured section, but those who prefer a deeper-coloured flower would select The President. Both are grand, the latter variety, if anything, carrying more four-bloomed sprays and showing greater intensity of colour.

Inspector and Melba, two varieties in the salmon shades, were also extra good, and though it is quite a business to get these varieties in really

good condition out-of-doors, under glass they are perfect, and as vigorous in growth as any of the others, and even deeper in colour, so that growers who require such colours need have no fear as to their doing well.

The older variety in the orange-scarlet shade, Thomas Stevenson, was good, but there is not room for it under glass with President. Dobbie's Scarlet is a true scarlet without any orange. This was also in good form, but this shade and the crimsons seem somewhat robbed of their colour with under-glass cultivation.

The pink varieties in many cases also lose colour, but Elfrida Pearson and Henry Olm are all one wants. The latter is a cream ground break from Frilled Pink, and though out-of-doors I have not much to say in its favour, under glass it is the very best pink, the growth is strong and the flowers as large, or even larger, than any other, very much frilled, and usually with double or treble standards, which in the bunch make it particularly attractive.

Old Rose (see fig. 141), a new variety last year, is very pleasing, the shade being indicated by the name; the bloom is of rare size and substance; and the same may be said of Dora, a new bicolor (pink), which received an Award of Merit last year from the Sweet Pea Society, and more recently one from the R.H.S. as a variety suitable for cultivation under glass.

In the pale blue and lavender shades, Orchid, Lavender, George Herbert, and Margaret Fife were all good, the last being of a very pretty shade of blue and equal in size of flower to our old favourite R. F. Felton.

Marks Tey always makes a good bunch, and Anzac, a variety that might be described as a paler form of it, is perhaps even more pleasing.

The cream shades, for general purposes, are not much in demand, but in a collection they are very desirable, and Ivorine and Tea Rose were noted as being particularly good. Under glass this latter seems to lose much of its subtlety of colouring; out-of-doors it has a shade of buff or veiled rose in it, but inside it was quite cream.

Miss Burnie and Constance Hinton were very fine indeed, both giving an abundance of extra fine flowers on good stems.

Warrior, a new maroon flower, was very good, and, as anticipated last year, brighter in colour than King Manoel. Maroons, perhaps, are not always appreciated by those favouring the paler shades, but a good bunch is attractive in a collection, and in some decorative schemes very effective. T. S.

R.H.S. RED CROSS SALE.

REVIEW OF CATALOGUE.

II.—BOOKS.

THOSE who enjoy the beauty of fine coloured illustrations, or appreciate the quaint, but life-like, descriptions of plants by the older writers will find an excellent opportunity of adding to their gardening and botanical libraries at this sale. They will, at the same time, by giving generous prices for the rare and beautiful volumes, help the great work of the Red Cross Society, as well as acquire for themselves unfailling stores of quiet pleasure and scientific knowledge in that great branch of nature study—gardening. From all sides one hears that, in these days of anxiety, strain and bereavement, nothing has proved so helpful and recreative as the time spent in the open air in garden work. A good book helps as much as anything to improve the would-be gardener's skill in producing better crops of fruits and vegetables or beautiful flowers.

On looking over the pages of the catalogue of the sale one is struck by the number of

books that would be useful to the ordinary owner of a garden. Such are:—

Bright's Year in a Lancashire Garden, one of the first of those dealing with the personal tastes of the owner and the individuality of his garden. Miss Jekyll's works, of which *Wood and Garden* and *Wall and Water Gardens* and others are offered, are perhaps the most perfect examples of the books in which the knowledge gained in the author's own gardening is put in a form that will help all other gardeners. Elgood's *Some English Gardens*, Miss Waterfield's *Garden Colour*, *Gardens Old and New*, and the now scarce studio numbers, *The Gardens of England in the Southern and Western Counties* and *Northern Counties*, and Miss Willmott's *Warley Garden* all show examples of the most successful styles of gardening in their fine illustrations.

Lord Redesdale's *Bamboo Garden*, many of the best books on Roses, by Dean Hole, Foster Melliar, Wright and Hibberd, are among the smaller works dealing with special families. A copy of Miss Willmott's great book, *The Genus Rosa*, and of Mr. Dyke's splendid monograph, *The Genus Iris*, are perhaps the two most important and valuable of modern works.

Among the older and scarce books with exquisite hand-coloured illustrations are a fine set of the 33 vols. of Edwards' *Botanical Register*, Curtis' *Flora londinensis*, portions of Curtis' *Botanical Magazine*, including two of the very scarce volumes, vols. 54 and 55; Miller's plates, illustrating his great *Gardener's Dictionary*, of which a copy is offered in a separate lot, and some volumes of the *Transactions of the Horticultural Society*. Of Maund's *Botanic Garden*, with its brilliantly coloured figures, four to a page, there is an interesting portion containing a presentation inscription by the author. Masson's *Stapeliae Novae*, as issued in board covers in 1796, contains 30 plates, most beautifully drawn and coloured, of some of the strangest flowers known.

In the fine set of Curtis' *British Entomology* the wonderful illustrations, though chiefly of insects, also include the most beautiful hand-coloured figures of British plants ever executed, and are thus of great value to both botanists and entomologists. Books of later dates and styles of illustration include portions of Paxton's *Magazine of Botany*, a fine set of Mrs. Loudon's works, Smith's *English Flora*, and Robinson's beautifully illustrated *Flora and Sylva*.

There is a copy of Wm. Roscoe's *Monandrian Plants of the Order Scitamineae*, presented by Mrs. Roscoe, and three copies of the *Flora of Kent*, presented by one of the joint authors, Mr. Frederick J. Hanbury.

Orchid lovers will find many treasures, especially *The Genus Masdevallia*, with Miss Woolward's beautiful plates, portions of *Lindenia and Reichenbachia*, and the *Dictionnaire Iconographique des Orchidées* (Cogniaux and Goossens). Alpine plants and rock gardens are dealt with in many of the more modern books, of which may be mentioned the Present-day Gardening series, which includes seventeen volumes. M. Correvon has presented copies of his book, *Les Plantes des Montagnes et des Rochers*.

There is a copy of the second impression of that most delightful of all Old-English gardening books, Parkinson's *Paradysus*, as well as copies of the excellent reprint published by Messrs. Methuen.

Among books of scientific and practical value should be noted Kerner and Oliver's *Natural History of Plants; The Origin of Cultivated Plants*, De Candolle: *A History of Gardening in England*, Amherst: *Ladies' Botany*, Lindley; *The Movements of Plants*, Darwin and Loudon's two monumental works, *The Encyclopaedia of Plants and of Gardening*.

Batty Langley's *Pomona* and Evelyn's *Sylva and Terra* must not be passed without mention.

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

THE RED CROSS SALE.—As a member of the committee engaged in organising the R.H.S. Red Cross Sale I have had the pleasure of going through the draft of the catalogue, and am able to say that it will include a greater variety of plants than I have ever seen in one catalogue before. Thanks to the liberal contributions which have been offered by many of our most distinguished horticulturists, among whom the directors of Kew and the Botanic Gardens of Edinburgh and Glasnevin are prominent, a great many plants of exceptional interest and variety will be found in the catalogue. Many members of the horticultural trade have also contributed most liberally. All that is now wanted to make the sale a great success is the attendance of buyers, and they must be hard to please if they cannot find something in this catalogue which cannot otherwise be got. *H. J. Elwes.*

PEACHES AND NECTARINES FAILING TO SET.—Since my note appeared in the *Chronicle* (p. 273) I have had a large number of letters from various parts of the country, several of which are from our best fruit-growers, all more or less complaining of the same trouble. To my mind it is idle to suggest that it is owing to faulty cultivation. By far the most sensible theory is that described by Mr. N. F. Barnes on page 313: the climatic conditions, in my opinion, are entirely responsible, and not the cultivator. *E. Beckett.*

—In these gardens three trees of *Violette Hative*, *Royal George*, and *Hale's Early*, at the cooler end of a cold house, all bloomed well; in fact, I never observed such a wealth of large flowers, the individual shoots being roped in flowers from the base to the top. All appeared to be going well for some few days, when down they fell wholesale, leaving scarcely a bloom on the trees, and the few that remained appeared to be the last to open. I came to the conclusion that either the degree of root action was not sufficient or the flow of sap might have received a check, this being aggravated by a very sudden high day temperature when the trees were at that early stage. The only precaution that might have saved the crop was to severely thin the flowers and lightly shade the trees from the very bright sunshine then experienced. Although the flowers appeared to be perfect, with pistil strong and well above the anther, and there was ample pollen, the necks of the individual blooms seemed rather weaker than would be expected, and on cutting some of the fallen flowers there was not the slightest sign of any fruits forming. The buds were on the move in January, and much too forward. Many years ago, when at Mereworth Castle, I had a similar failure with outside trees, and if my memory serves me right, there was for quite 10 days or more before the flowers fell very hot, sunny weather. I then considered the temperature was too high, and the roots of the trees too cold and slow to supply sufficient sap to support the flowers. Returning to my present case, trees at the drier end of the house have set a very good crop, which is in every way satisfactory. With regard to the fruit falling when the size of peas, I think this usually follows excessive heat and sunshine, and on opening the tiny fruits one frequently notices a little brown patch on the soft-forming kernel not unlike a burn. I have sometimes lost numbers of *Morello Cherries* at the stoning period through excessive heat. *H. Markham, Wrotham Park, Barnet.*

—I have experience in growing Peaches and Nectarines in—probably—the worst climate in England, for these gardens are in N.E. Lancashire, on the slopes of Pendle Hill, where the conditions described by your correspondents are the rule, and not the exception, in spring and early summer, when the trees are in bloom. Yet I have good crops of these fruits, this year being no exception. The complaint before I had charge of these gardens was that Peaches and Nectarines could not be grown in this smoky district. My methods are as follows:—I never water the borders

before the trees are in flower; in fact, not until the fruits are set, but at no time are the roots allowed to become quite dry. No moisture is allowed in the house at this period, nor pot plants, as I am of the opinion that the transpiration of their foliage is not conducive to a good set of fruit. All the ventilation possible, without causing cold draught, is given, and the blooms are carefully pollinated with a soft brush. Pollen is scarce, so the best possible use is made of what there is. Pollinating thus carefully is tedious and slow work, but amply repays when a good set is obtained. The only conditions that prevent development of the fruits afterwards are excessive moisture around the embryo fruit and a temperature much below 32°. On several occasions this season I have seen the thermometer below freezing point in my late Peach house, yet no harm has accrued. The weather conditions that Mr. Barnes describes in December and January were the same here. At the end of January the buds were very prominent; in fact, some of them showed colour. The trees were retarded for weeks, with no ill-effects so far as I can see. When the days are short great care is taken to ensure a good set; rarely is such care taken with trees in late houses, a tap or two on the trellis and sometimes an indiscriminate drawing of a rabbit's tail tied on a bamboo cane along the flowers are considered sufficient. In ideal conditions these details are good enough, but in adverse conditions more care should be taken. Several growers of wide experience have seen my trees this year. They all say that rarely have they seen anything to equal them. *N. D. Hort.*

—For the failure of Peaches in cold houses to set I suggest that the weather alone is responsible. Growth and development were brought to a standstill in early autumn by frost, and, as has been often shown, a temperature sufficiently low to put plants to rest predisposes them to early starting. We also know that when a tree on the Plum stock is taken up in autumn as soon as the leaves have ripened, and "laid in by the heels," while the weather remains warm, roots will be emitted in a few days, which shows the excitability of the plant when it has received such a check in the latter stage of ripening, as will, without permanent injury, arrest growth. Next, we must remember the summerlike temperature of January, both by night and day, which was just the thing to excite the pent up energy. Would that we had some of those warm nights now, instead of the frosty ones we are experiencing. Such weather suited the early houses admirably, and later ones might have done very well had the remainder of the season been normal, but during the time of flowering day after day was sunless, and but little above the freezing point, so that progress was impossible. Flowers of such plants as Peaches and Apricots cannot long remain stationary; if they are not going forward they will go back, however perfectly they may have developed up to this time. A few degrees of frost will frequently do them no apparent harm, unless the sun shines on them while they are actually frozen, but a temperature little above the freezing point continued for two or three days is very likely to prove fatal. Outside Peaches, being later, probably escaped the worst of the weather conditions while in flower, and they would hardly feel the abnormal temperature of January as much as those under glass. The thanks of many growers, whose abilities, supposing they possess them, are not so well known as those of Mr. Beckett, will be due to him for his candid admission of failure under extraordinary, and, as far as I can remember, unprecedented circumstances. A gardener, who may be an undiscovered Paxton, will feel uncomfortable when he listens to something like the following taunt: "I went to the expense of building a Peach house, and you were recommended as a qualified practical gardener, but I have not a single Peach; while my neighbour, who has only a rough wall to accommodate his trees, and keeps no regular gardener, has hundreds of fruits." It is not easy to make the uninitiated understand the cause of this anomaly. *Wm. Taylor.*

—I have three houses, the earliest of which contains a good crop. The second (a cool house) has failed to set a single fruit on five trees. In

the latest house there are two trees of *Pineapple Nectarine*, one of which is an utter failure, while the other has a very fair crop (now stoning). The remaining tree, a *Princess of Wales Peach*, is also completely bare of fruit. In every case the trees were full of bloom, but the flowers all dropped during the pollinating process. In each of the previous five seasons all the trees have borne very heavy crops. *H. T. Zobel, Castle Hill Gardens, Rotherfield.*

—Unlike most gardeners, I can say that I have been successful with my late house this year, in which the trees are carrying good crops and have just successfully passed the stoning period. I noticed in January that the spring-like weather had caused the sap to commence rising prematurely. In early February the weather changed, but rather than check the flow of sap I closed the house earlier than I should otherwise have done, growing the trees as steadily as possible. I account for the failure of many crops by the fact that the sap commenced to rise in January and received a check during the bad weather following, which caused badly-formed flowers, and consequently a bad set. *L. S. Mousley, Norley Bank Gardens, near Warrington.*

PROTECTION OF HORTICULTURAL NOVELTIES.—May I, as a hybridiser and plant breeder, most heartily support the admirable suggestion for the protection of horticultural novelties made by *Plant Breeder* in your issue of June 3. It is not too easy for the hybridiser to get his new production recognised at all unless he is connected with the trade; but even if it be recognised he has small chance of getting any credit for it or reaping any reward for long years of labour, in present conditions. I believe I am right in citing *Rhododendron Pink Pearl* as an instance of a case in which the raiser got little for his pains, though in this I speak subject to correction. The raising of new species and hybrids is, in the case of some plants, a long and expensive business, which demands infinite patience and unremitting attention, and it is hard that so little benefit should accrue. The *Daffodil* raisers seem able to protect themselves, and could probably advise the Parliamentary Committee of the R.H.S., if they would be kind enough to do so, for the protection of others, and it would really be of inestimable benefit to the hybridiser if this powerful committee would interest itself on his behalf. *E. I. P. Magor.*

GROWTH AND CULTURE OF MEDICINAL HERBS.—To meet the growing interest on this subject aroused by the lecture given under the auspices of the Central Committee for National Patriotic Organisations by Mr. E. M. Holmes, F.L.S., at the Royal Horticultural Society's Rooms on April 11, 1916, the Central Committee have arranged for a second lecture by the same authority to be delivered at the Caxton Hall, Victoria Street, Westminster, at 4.30 p.m. on Tuesday, June 20. Mr. Holmes will deal in greater detail with the collection, seedling and culture of some of the medicinal herbs, the need of which is most acutely felt, and especially with the question of drying both leaves and roots in a proper and marketable manner. *Henry Cust, Chairman of Central Committee for National Patriotic Organisations.*

THE WASP PLAGUE.—During the month of May we destroyed 1,904 queen wasps. *James Hoad, Colworth Gardens, Sharnbrook, Beds.*

AERATION OF THE SOIL.—I read with much interest the article on "Aeration of the Soil" by Mr. H. Evans, p. 315. He states that grass exercises some poisonous influence over fruit trees. The same probably accounts for climbing Roses planted on grass not being so healthy as those in beds and borders where aeration of the soil is assured. It has often occurred to me that fruit trees on grassland never get their full amount of water in the summer time. I believe it is a fact that however small an area is kept free of grass around fruit trees the health of the trees is much improved. As a rule most crops suffer if they are surrounded by a pan of hard soil, hence aeration of the soil is a matter of great importance. *C. R.*

SOCIETIES.

ROYAL HORTICULTURAL.

Scientific Committee.

JUNE 6.—*Present*: Mr. E. A. Bowles, M.A. (in the chair), Dr. Bateson, Messrs. Fawcett, Wilson, Rawson, Fraser, Ramsbottom, Worsdell, Odell, Allard, and Chittenden (hon. sec.); Mr. R. Farrer (visitor).

Certificates of Appreciation Recommended.—A Certificate of Appreciation was recommended to Mr. H. J. Chapman for his work in raising Dutch Irises belonging to the Niphium section, that flower about a fortnight earlier than the Spanish; and to Messrs. Charlesworth for work in raising the new intergeneric hybrid Orchid, *Wilsonara* × *insignis* (*Oncidioda* × *Charlesworthii* × *Odont. illustrissimum*), combining species of the genera *Ocochioda*, *Oncidium*, and *Odontoglossum*, and exhibited by Mr. GURNEY WILSON.

Weldenia candida.—A Botanical Certificate was recommended to this bog plant, with frog-bit-like foliage, shown at the Chelsea meeting by Messrs. BEES, of Liverpool.

Abrerations in Tropaeolum.—Col. RAWSON, who recently showed pressed specimens of *Tropaeolum majus*, in which multi-spurred peloria and proliferation had separately appeared on different plants, now exhibited specimens in which both were combined in the same flower, as well as on the same plant.

Allium narcissiflorum varying.—Mr. Bowles drew attention to a slender form of *A. narcissiflorum* which Mr. REUTHE exhibited in the Hall, collected from the Alpes Maritimes. It had smaller flowers, narrower foliage, and longer stems than the normal form, which was also exhibited.

Hybrid Saxifrages and Viola.—Mr. MURRAY HORNIBROOK sent from his garden at Knapton, Abbey Leix, Queen's Co., two apparently hybrid Saxifrages and a hybrid Viola, with the following notes.

Saxifraga Aizo-retioides.—This was a small plant sent to me growing among the rosettes of a collected plant of *S. aetzioides*. Mr. Irving, of Kew, who saw it here last year, took it back for comparison, and thinks it a natural hybrid, and intermediate between its parents. It seems nearer to *S. aizoon*, but note its *Kalischia* habit of growing from one tap root; in one of the plants sent (the flatter one) the rosettes lie so loosely on the surface that this characteristic is easily perceived. It is the same in the other, but its (again) *Kalischia*-like 'humped' growth makes its tap root not so easily perceived. The flowers are pale yellow.

S. Cotyledon seedling, picked out of a pan. I do not know what it crossed itself with, but its flowers are most distinct, being not 'spotted' but 'blotched' with vivid crimson lake, so much so as sometimes practically to cover the whole petal; at other times the white margin is more or less in evidence.

Viola × *Knaptonensis* is a hybrid between *V. hosiaria* and *V. tricolor*, having the colour (but richer) of the former and the 'velvet' of the latter. Its flowers usually have lemon-yellow blotches on the lower petals, but sometimes, especially in full sun, the flowers are altogether crimson-rose.

Malformed Delphinium.—Mr. H. S. L. WILSON, of Crofton Hall, Walsfield, sent some curious flowers of *Delphinium* from his garden having large foliose sepals. The flower at the upper part of the stem was normal, and only one stem on the plant bore malformed flowers.

TRIALS OF AUTUMN-SOWN CABBAGES.

The following awards have been made to autumn-sown Cabbages by the Council of the Royal Horticultural Society after trial at Wisley.

FIRST-CLASS CERTIFICATE.

Ellam's Early Dwarf, sent by Messrs. BARR AND SONS.

AWARDS OF MERIT

First and Best, introduced by HURST AND SONS, sent by BARR AND SONS.

Barr's Eclipse, introduced and sent by Messrs. BARR.

Sutton's Harbinger, raised, introduced, and sent by Messrs. SUTTON AND SONS.

HIGHLY COMMENDED (XXX).—Flower of Spring, sent by Messrs. R. VEITCH AND SON; Sutton's April, raised, introduced, and sent by Messrs. SUTTON AND SONS; Spring Beauty, raised, introduced, and sent by Messrs. BATH, LTD.; Sutton's Flower of Spring, introduced and sent by Messrs. SUTTON AND SONS; First and Best (Hurst's), introduced by Messrs. HURST, sent by Messrs. BARR AND SONS.

COMMENDED (XX).—Early Favourite, sent by Mr. J. P. FARR; Sutton's Favourite, raised introduced, and sent by Messrs. SUTTON AND SONS.

LINNEAN.

JUNE 1.—Sir David Prain, C.M.G., F.R.S., president, in the chair.

Prof. JULIUS MACLEOD, University of Ghent, contributed an account of his paper on "Quantitative Variation in Certain Diagnostic Characters of Ten Species of the Genus *Mnium*," which was communicated by Prof. F. E. WEISS, F.L.S.

He asked: "Is it possible to describe and to identify an animal or a vegetable species by means of numbers representing the value of the specific characters? I have tried to realise this by measuring 38 characters in about 90 species and 20 varieties of the genus *Carabus*. The war prevented me from finishing and publishing my work.

I tried to carry out similar work with plants. At the suggestion of Prof. Lang, I took mosses of the genus *Mnium*. I limited myself to the study of the leaves of the fertile stem of ten species of that genus.

When we measure, for instance, the length of the successive leaves from the base to the summit of a fertile stem of a *Mnium*, we see that the length increases up to a maximum and then diminishes.

This curve represents the variation of the character under consideration along the axis. This peculiar form of variation may be called gradation. It is something quite different from variation properly so called. (An interesting paper on this subject, with special reference to the length of the internodes of the stem of *Phanerogams*, was published by Percy Groom, 1908.) The gradation of the measured characters of the ten species of *Mnium* shows much diversity.

In these examples it is possible to find the name by four characters; of course, we may often be compelled to make use of five or more characters. As we have at our disposal a dozen characters, we may hope that the identification of a given specimen will be always possible, even if the species were more numerous."

ROYAL INSTITUTION.

GROWING TIME AND SEED TIME.*

It is the first duty of science to reveal the mystery which lies hidden in common places: to state the problems of life as a preliminary to efforts to find solutions of them. So we must state the problem with which we deal to-day. In spite of exceptions, of plants like the Potato, which rarely flowers, and of Roses and Carnations, which are in flower perpetually throughout the summer, the growing time and flowering time of most perennial plants stand in sharp antithesis one to the other. What are the laws which control and order these opposed processes? What is the nature of the decree which determines this alternation of growth and reproduction? Is the periodic change from vegetative growth to flower formation due to some internal rhythmic change—an internal rhythm independent of external conditions, or is it brought about by periodic change in external conditions? Is this rhythm innate or induced?

We may first endeavour to obtain an answer by consulting the experience of gardeners; for they who spend their lives among plants, and who observe them closely and continuously, may be able, from the stores of their experience, to throw light upon this problem.

* Second lecture on "Modern Horticulture," delivered by Dr. Keeble before the Royal Institution. (See *Gard. Chron.*, May 13, p. 260.)

Of course, it is not open to question that weather affects crops, deciding not only between a bountiful or a lean, but also between an early or a late harvest.

This, however, is too vague to be of much assistance to us. Other facts known to the gardener seem, however, to point more definitely in the same direction. According to the procedure which he adopts the gardener is able in no small measure to force plants to flower or to compel them to remain in a vegetative state. For example, it is a common practice to "ripen plants off" in order that they may flower soon after they are allowed to pass into active growth again. Although this applies to many plants—Geraniums, Hippeastrums, Begonias—it is perhaps most conspicuous in the tropical and sub-tropical epiphytic Orchids cultivated so largely in glasshouses in this country.

In the early days of Orchid growing, when collectors brought home specimens of these amazing plants, which live not in the earth but in the air on tree trunks, they sometimes found that the Orchids hung up in a ship's cabin burst into bloom, although without any visible means of support except the nail from which they hung. Hence some cultivators attempted to grow their imported plants suspended from wooden blocks on the roofs of glasshouses. This starvation method was, of course, doomed to failure, for although they might flower once, even Orchids cannot live on wood alone.

Nevertheless, it is now well recognised that if these plants are to flower they must at the proper season be partially dried off; otherwise, if they are kept growing in moist conditions throughout the year, they fail to blossom.

Many other facts point also to the same conclusion, namely, that a curtailment of water-supply is favourable to flowering.

A fruit tree which produces too much leaf and too little fruit may be restored to fertility by root-pruning. By cutting away some of the main roots, the fibrous roots, the organs of absorption of water are reduced in numbers, and, consequent upon a smaller supply of water, the unfruitful tree becomes fruitful.

So in certain moist countries it is the practice among Coffee growers to bend or break the branches in order to induce flower formation. Vines are sometimes caused to blossom by partially exposing their roots to the air.

On the other hand, many an amateur gardener prevents the plants in his greenhouse from flowering by a too liberal use of the watering-can. Indeed, it is possible to prevent some plants (*Mimulus*) from flowering by keeping them continually watered. A certain poverty of soil is also favourable to flowering. Market gardeners who grow leaf and stem vegetables spread huge quantities of stable manure—when they can get it—on the land, thereby providing a rich, nitrogenous diet, and a liberal supply of water, and, as a consequence, vegetative growth becomes active, and the Cabbages and salads grow into large and profitable crops. The fruit grower is, on the other hand, far more sparing in the use of stable manure, and those who make it their business to grow flower-crops for seed select, not the most fertile, but light and somewhat poor land for their seed farms. If, as is to be hoped, this country decides to depend more on itself and less on German and other foreign-grown seed, there should be no great difficulty in finding land suitable for seed farms, although there may, under existing trade conditions, be some trouble in providing the necessary labour.

Gardening experience shows that a not undue supply of water, a light soil, and a restricted supply of nitrogen, favour the transition from vegetative to reproductive growth. It is also known that many plants require for flower formation brighter light than that which suffices for vegetative growth. In illustration may be cited the well-known fact that Ivy rarely blossoms on a wall, but that when it reaches the top and finds itself freely exposed to the light of the heavens it breaks into bloom. It is, I believe, because of the high intensity of sunlight in Italy and in California that these countries are becoming great seed-raising countries. Whether we shall be able to correct artificially the somewhat defective sunlight of this country remains for the future to determine, although such ex-

periments as have been made encourage the hope that this method of increasing plant-fertility may prove successful.

There remains yet another way in which the gardener is able, with great effect, to control not only the time of flowering, but also the size and colour of the flowers. The mode of treatment consists in determining which buds—whether those produced on main branches or on branches of the main branches—shall be allowed to form the flower, as, for instance, in *Chrysanthemums*.

If the facts already cited were the only ones known to the gardener we should be inclined to conclude that external conditions, particularly of water supply and sunshine, play a most important part in determining the transition from vegetative growth to flower formation. But there are other facts discovered by practical growers which point rather in an opposite direction. For the gardener is constantly discovering that when a plant is "ripe to flower," flower it will, in spite of any treatment short of killing, which he may mete out to it. Who has not taken cuttings of such plants as *Pentstemons* whilst they were yet in the flowering stage, and observed that the cuttings went on flowering as soon as they had struck, and continued to flower off and on all through the winter? The behaviour of *Begonias* in this respect is instructive. If cuttings be taken in May, before the flowering period, they strike, and form leafy plants which flower in November; but if leaf-cuttings be taken from plants in flower (in July) they form but little foliage, and flower prematurely in September. It is as though a plant produces, as a preliminary to blooming, some special substance which serves to change vegetative into floral growth. Indeed, many years ago one of the greatest of plant physiologists definitely put forward this hypothesis, and introduced the expression "flower-forming stuff."

Although the hypothesis, no doubt, because of its vagueness, has never become popular, I think that it has to recommend it the first requisite of a provisional hypothesis—that of usefulness.

It is interesting to observe that this flower-forming stuff hypothesis was put forward long before the modern theory of chemical stimulation by means of specific substances known as hormones. On this theory many changes which occur in the body are held to be brought about not by a nervous impulse, but by the specific chemical action of a hormone. Thus it has been proved that even if all nervous connections between the organs are severed, the pancreas begins to secrete pancreatic juice as soon as food reaches the stomach of an animal; and Starling, by extracting it and demonstrating its powers to evoke pancreatic secretion, has succeeded in proving conclusively and brilliantly that the agent which brings about secretion by the pancreas is a definite chemical substance, which is discharged into the blood by the cells of the stomach when food enters that organ.

It cannot be doubted that special chemical stimulators or hormones play an important part in inducing changes in plant activity, and it may well be that specific hormones are responsible for the setting up in the plant the change which induces it to pass from a vegetative state to a flower-forming condition. In any case, the modern theory of hormones finds an early precursor in Sachs' "flower-forming stuff." That some internal change not to be referred directly to external conditions calls forth flower formation seems to follow from many well-known and obvious facts. For example, in many plants the buds show a division of labour: some are recognisably destined from an extremely early stage to become flower-buds, and others to become wood or leaf-forming buds. Everyone who gardens knows how to distinguish, both by their appearance, size, and position, the woolly, blunt-nosed flower-buds of the Apple from the smoother, more pointed wood buds. And in the Pear the fat fruit buds have been for months manifestly distinct from the finely-pointed, spear-like buds destined to form leafy branches.

Thus far we have consulted the experience of practical men, and have endeavoured to codify the known facts. Having got so far, I am free to confess that the mode of treatment which I have adopted in this lecture may serve as a parable of method. It must be admitted that in

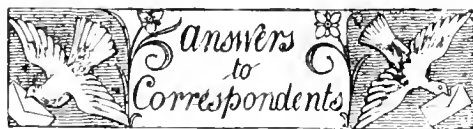
the particular problem we are concerned to elucidate the results achieved by the method are not very conclusive. Here we have a hint that conditions of environment determine the vegetative or reproductive state of the plant, and there we find some evidence that the plant is master of its fate, and moves on in obedience to some internal behest from vegetative to reproductive phase. But another method exists: one by which problems such as this, and greater than this, may be solved. It is the method of experiment.

A flowering plant is a highly complex structure. Its body is composed of vast numbers of cells of all degrees of specialisation. It lives a double life—part in the earth and part in the air. Only on the superficial cells may the changes in environment play directly; those situated within the plant are shut off from direct contact with the plant's environment. The tissues which are to develop into leaves or stems or flowers are often formed a year in advance, and hence any effect produced by environment may only be manifested by them when they come to maturity a year after the environment has produced this effect. For example, if a tree such as a Beech grow part in sun and part in shade, it produces two forms of leaf, sun leaf and shade leaf, which differ from one another in texture, size and thickness. If such a tree be so orientated that the shaded part of last year is now exposed to the sun, the buds of that part give rise in due time to shade leaves, in spite of their sunny position. Their destiny was decided at the time of their formation, and the sunshine came too late to alter that destiny. Wherefore it is evident that we must choose for the subject of our first experiments some plant of far simpler structure than the complex flowering plant.

(To be continued.)

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

JUNE 5.—The monthly meeting of this society was held at the R.H.S. Hall on Monday, the 5th inst.: Mr. Chas. H. Curtis presided. One new member was elected. One member withdrew from his deposit account the sum of £105 12s. 7d., leaving a balance of £10 to his credit, and one member was allowed to withdraw double the amount of interest due to him, viz., £2 10s. 10d. The sums of £47 1s. 6d. and £5 17s. respectively were passed for payment to the nominees of two deceased members. The sick pay for the month on the ordinary side amounted to £43 1s. 8d., and on the State side to £19 0s. 10d., and maternity claims, £10 10s. A copy of the interim report of the Departmental Committee on Approved Societies was read, and it is hoped that the recommendation by them will be carried out, viz.: "That all societies of over 1,000 members will not have to associate with other societies for pooling surplus funds."



COPPER SULPHATE FOR CLEANSING PONDS:

M. S. A. The proportion of copper sulphate recommended is 1 lb. to every 100,000 gallons of water. It should be used in lumps not smaller than a marble, or it melts too quickly. If the blanket weed is dense, the bulk should be removed first, otherwise it will be killed and sink to the bottom of the pond, causing much injury to both plants and fish. The copper sulphate will not injure the Water Lilies.

CORRECTIONS.—For *Miconopsis*, p. 313, read *Meconopsis*, and for *Monocharis*, p. 314, read *Nomocharis*.

DECAYED CERES: D. W. Thomas. Sever the stem of the Cereus 2 inches above the decayed portion. It is advantageous to sacrifice an inch of sound stem than to cut it off at a point where the disease appears to end, as the least portion of disease would quickly spread. Place the top portion of the stem on a dry shelf for

a few days to allow the base to become dry. Afterwards place it into a thoroughly drained pot, just large enough to hold it, filled with sandy loam. Stand the pot in a light, warm corner of the house, and give the soil very little water until roots develop; just sufficient to prevent the soil getting quite dry will suffice.

NAMES OF PLANTS: G. S. The Orchids are *Oncidium flexuosum* (the yellow flower) and *Miltonia vexillaria*. The others are *Begonia hybrida* and a variety of *Balsam*. The specimens were not numbered, and the box contained no packing material, so that the scraps arrived in a very bad condition.—*Juliet*. Your flower appears to be a cross between *Odontonia Lairesseae* (M. Warszewiczii × *O. crispum*), illustrated in *Gard. Chron.*, July 1, 1905, p. 2, and *Cochlioda Noezliana*. It is not *Odontonia Lairesseae*, as you suggest, neither is it *Odontodia*, under which name you acquired it. The evidence of *Miltonia Warszewiczii* in the shining surface of the centre of the lip proves the presence of that species, and the red colour of the other segments tell of *Cochlioda Noezliana*. The combination we suggest should give such a flower. The cross has never been shown so far as we know.

PEACHES AND NECTARINES UNHEALTHY: J. C. W. and Son. There is no organic disease in the shoots that would cause the trouble. Unsuitable conditions at the roots are the most probable cause of the unhealthy conditions of the trees. Overhaul the borders in the autumn and see that they are efficiently drained.

PLUM LEAVES CURLING: E. G. The injured condition of the foliage is due to the root being waterlogged. No disease is present.

THUYA OCCIDENTALIS DYING: A. P. There is no organic disease present to account for the plants dying. The trouble must be looked for in some wrong condition at the roots, which can only be determined by those on the spot. Is the drainage perfect?

TREES AND SHRUBS FOR CHALKY SOIL: P. The number of trees and shrubs that do well on chalky soil is very large, and it would really be easier to give a list of those that do not thrive. The famous garden of the late Canon Ellacombe at Bitton, near Bath, is on a limestone formation, yet the wealth of his collection was remarkable. The chief families that refuse to do well on limestone soils are the *Ericaceae* and *Vacciniaceae*, but amongst them there are exceptions. A number of Chilean shrubs like *Eucryphia* do not like soils of this nature. The following families may be recommended to you: *Clematis*, *Spiraea*, *Berberis*, *Viburnum*, *Prunus*, *Tilia*, *Hollies*, *Ceanothus*, *Æsculus*, *Acer*, *Rhus*, *Laburnum*, *Genista* and *Cytisus*, *Wistaria*, *Robinia*, *Caragana*, *Cercis*, *Rubus*, *Rosa*, *Pyrus*, *Crataegus*, *Philadelphus*, *Deutzia*, *Cydonia*, *Cotoneaster*, *Lonicera*, *Forsthia*, *Lilacs*, *Fraxinus*, *Catalpas*, *Lavender* and *Rosemary*, *Betula*, *Ainus*, *Fagus*, *Quercus*, *Cedrus*, *Carpinus*, *Taxus*, *Juniperus*, *Cupressus*, *Pinus*, *Platanus*, *Juglans*, *Carya*, *Ulmus*, *Vitis*, *Morus*, *Bamboos*. The following species may be recommended:—*Sequoia gigantea*, *Abies Pinsapo*, *Daphne Mezereum*, *Ligustrum lucidum*, *Rhododendron hirsutum*, *Erica carnea* and *mediterranea*, *Diervilla Eva Rathke* and *Abel Carrière*, *Arbutus Unedo*, *Ribes sanguineum* and *aureum*, *Escallonia langleyensis* and *Philippiana*, *Double-flowered Gorse*, *Cistus Loreti*, *cyrius*, *purpureus*, *corbariensis* and *laurifolius*, *Helianthemum formosum* and *vulgare*, *Hypericum patulum* Henryi, *Magnolia stellata*, *Sonchaeana*, *conspicua*, *parviflora* and *Lennei*, *Hydrangea petiolaris*, *arborescens* and *paniculata*, *Tamarix tetrandra* and *pentandra*, *Enonymus latifolius* and *europaeus*, *Caragana arborescens* and *aurantiaca* and *Ginkgo biloba*.

Communications Received.—Leslie H. B., Melbourne—W. C., Edinburgh—Lt.-Col. M.—A. J. B.—B., Ltd.—J. J. and S., Cirencester—F. G.—W. S. B.—W. T. & Co., Ltd.—G. B.—Caltha—A. W.—R. F. D., Campbell—E. M. H.—W. C.—P. Aquatics—C. Davies—J. J. & Sons—G. J.—H. A.—Gardener, Hants—G. J., Stevenon.

THE

Gardeners' Chronicle

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NOTES FROM A COTSWOLD GARDEN.—VIII.

SINCE writing my last letter, I have seen some gardens in Scotland and Yorkshire that make me envy the dwellers in the North both their soil and their climate, as I have often done before; for, though there has been a certain amount of real summer weather, I live in constant fear of one of those killing frosts which so often do irreparable injury about this time. But in the meantime vegetation is flourishing and growing as I have hardly, if ever, seen it so early in the year; and the rapidity with which plants come into, and go out of, flower is amazing. The Paeonies of which I wrote last have all passed and set seed, and others as beautiful have taken their place, among which a variety of *P. officinalis*, *P. tritermata*, as well as two which Messrs. Barr sent me as anomalous insignis and *P. Bakeri*, are the best. A charming dwarf, white-flowered Paeony from Crete was, like *P. Emodi*, nipped by the frost in March and the flowers spoiled. *Meconopsis* and *Eremurus* are now coming out with unusual vigour, and the difficulty of making a selection among so many varieties, and of knowing what to call them, becomes yearly greater. The same remark applies with even greater force to the Primulas, whose numbers are becoming so overwhelming that after two days in the Botanic Garden at Edinburgh with all Professor Balfour's knowledge and experience to guide me, I came away with a feeling of bewilderment, and a conviction that a Primula Committee is now wanted quite as much as a Narcissus or a Tulip Committee. When such a body is formed the task which Nature has set them to clear up will be even harder than that which the Tulip and Narcissus fanciers have created by art. It seems to me quite evident that

such plants cannot properly be brought before a committee of florists, whose knowledge, interests and taste usually run in very different lines. I dare say that something approaching 200 species of Primula have been, are now, or will shortly be in cultivation, and that amongst them there may be fifty species which are so beautiful, distinct and amenable to cultivation when we understand their wants better, that those gardeners who have a liking for choice and interesting rather than showy plants will want to have them. There are perhaps twenty to thirty more that we shall go on buying, just as we do with Lilies, even when we know that their life is likely to be short, because they are so charming that we cannot be happy without them. One of the things that surprised me most at Edinburgh was to see such gems as *P. vinceterra*, *P. Elwesiana*, and others which Professor Balfour told us at the Primula Conference must be kept dry in winter, flourishing exceedingly on his wonderful rockery, and even in the rich soil of a Rose-bed, where he planted them out last year. How long they will live remains to be seen, but, even if these fail, there are other new ones, among which *P. helodoxa* is pre-eminent, which are as vigorous and seem as easy to grow as *P. pulverulenta*. *P. helodoxa* seems to have only one fault, and that is excessive height, as it forms four, five, or more whorls of flowers one above another and attains three to four feet. (See *Gard. Chron.*, May 27, 1916, figs. 123, 124.) Nothing can be more beautiful than *P. nutans*, which seems likely to rival its ally *P. sikimensis* in fragrance, and will, I hope, be as easy to grow. But the most startling plant for colour that I saw at Edinburgh was a variety of *Meconopsis simplicifolia* introduced three years ago from Tibet by Captain Bailey, which is much more vigorous this year than it was last season; the brilliance of its turquoise-blue flowers, especially on the reverse side of the petals, is exceeded by nothing that I know; and, though I fear it is not perennial, it ripened seed last year. *Meconopsis paniculata* and *M. Wallichii*, where they thrive, I look upon as two of the choicest hardy biennials in cultivation. But, unless some of the newer introductions, such as *M. Prattii*, *M. rudis*, and *M. eximia*, become much finer than those which I have raised, they will hardly find a permanent place in many gardens.

Hardy terrestrial Orchids are usually supposed to be difficult to grow, and still more so to keep, but if people would give them a little of the care and skill that they give to hothouse Orchids we should soon find out the secrets of their life-history. I have managed to keep alive for sixteen years and to flower several times one of the rarest and prettiest of the hardy Cypripediums, namely *C. guttatum*, which I found in the pathless forest of the Altai mountains in 1899; and last year I had some lovely varieties of *C. ventricosum*, which is much more vigorous and striking. But at present I do not know how to treat them, or

where to plant them, and it seems very much a matter of chance whether most of these Cypripediums live or die. Mr. Irving, however, has got *C. ventricosum* established on the top of the Kew rockery facing north-west, where its white form was, to my mind, the choicest thing on the whole rockery recently; and I have got a fine form of *C. calceolus* which I brought from Arctic Norway in 1905 still flourishing, though experience of other plants from so far north led me to expect exactly the contrary. But this is just what makes hardy Orchid growing so interesting: one never knows what to expect. Who would believe until they saw it, as I did at Scampston Hall recently, that the Shetland Orchid, *Orchis incarnata*, which also thrives admirably at Colesborne, would grow side by side and in similar conditions with *O. foliosa* from Madeira, *Aceras hircina* from Switzerland, and some of the Algerian Ophrys, which Mr. St. Quintin finds harder than the same species collected on the Riviera 500 miles farther north? This gentleman is probably the most skilful grower of these plants in England, and if he will give us the benefit of his experience in print he will confer a great benefit on others. It is, however, much to be feared that if hardy terrestrial Orchids ever became popular, their destruction by collectors for sale would be encouraged, and though some of them may be grown from seed when the conditions of their germination and development are understood better than at present, yet this method of increasing them is never likely to be remunerative, as in the case of more valuable exotic Orchids.

The earlier varieties of *Eremurus* have rushed into flower here very fast, and I now find it impossible to distinguish with certainty between seedlings of *E. robustus* and *Elwesianus*, which vary greatly in their height, vigour, and season of flowering. All of them are stately plants, but selection of the best forms is necessary now that they are becoming common, and though they evidently like a naturally rich and well-drained soil, yet they are apt to become too tall and their flower-stems too weak to stand up well if they are divided and planted in highly manured borders. There is great variation not only in their colour but in the thickness of the flowers on the stem and in the length of the pedicel, and some of my most robust seedlings have too long a stem below the flowers. In the original *E. Elwesianus*, which was, I believe, only a form of *robustus*, there was about two feet of bare stem to four feet of flowers; in its seedlings, both pink and white flowered, this character is not maintained. I have an *Eremurus* which flowers three weeks later than *robustus*, and though the flowers are similar in colour, its habit and leaves are so distinct that I have called it *E. robustus tardiflorus*; it comes into flower between the broad-leaved *robustus* and the narrow-leaved and much later flowering species and hybrids, which, though normally yellow in colour, vary to puce, pink, and even white. Most of these were less robust and hardy when introduced, though their seedlings seem to

be easier to grow than formerly. I am inclined to think that the best situation in which to plant all the broad-leaved *Eremuri* is the back row in a herbaceous border, or among low-growing shrubs, where their leaves can be sheltered from spring frosts and the bare part of their stems hidden. In such a situation they look better, and, if not overcrowded or shaded, grow quite as well, but their thick fleshy roots spread so far from the crown that care must be taken not to injure them when the border is pricked and cleaned.

I must say a good word for an old and much-neglected plant which was at the end of May the most beautiful shrub in my garden. This is *Kerria japonica flore-pleno*, which, notwithstanding what Mr. Bean says (*Trees and Shrubs*, I., 683), is as hardy as anything I know; and in a neglected corner, where it hardly sees the sun, climbs up among the Yew branches which overhang it in wreaths of golden flowers. It has had not the slightest attention for twenty-five years at least, and is immensely superior to its single form, which I do not think worth growing *H. J. Elwes*.

ASTER PURDOMII.

THE dwarf Aster illustrated in fig. 143 was collected by Mr. Purdom for Messrs. J. Veitch and Sons on the mountains of Tai Pei Shan.



FIG. 143.—*ASTER PURDOMII*: FLOWERS VIOLET MAUVE COLOUR.

Shensi, and is named in his honour. It was awarded the R.H.S. Award of Merit in 1913. The plant is dwarf, and suitable for the rock garden, the flowers being about 9 inches high. The petals are a shade of violet-mauve surrounding a small, pale-yellow disc, on unbranched, slender, hairy stems. The flowers vary from 1½ inch in diameter to over 2 inches, and have from thirty to fifty narrow ray florets. In colour and general appearance the bloom suggests a small flower of *Erigeron speciosus*. The lower leaves are ovate or ovate-lanceolate, with a few distinct marginal teeth, and distinctly stalked. The few stem leaves are sessile, lanceolate to oblong, and more or less entire. The illustration is from a photograph of a plant exhibited by Mr. J. C. Allgrove.

ORCHID NOTES AND CLEANINGS.

ODONTOGLOSSUM ROSEFIELDIENSE THEODORA.

THIS handsome *Odontoglossum* was raised by De Barri Crawshay, Esq., Rosefield, Sevenoaks (gr. Mr. Stables), between *O. Harryanum* and *O. Lambeauianum* (*Rolfæae* × *crispum*), and flowered first in 1911. A description of the original form was given in *Gard. Chron.*, January 21, 1911, p. 46, following the Award of Merit. A remarkable form of the plant has recently flowered at Rosefield, and has proved to be the finest of the favourite section of *Harryanum* crosses. The flower extends 4 inches across the sepals, the petals being 1½ inch wide and the lip 1¼ inch broad. The petals and lip are broadly ovate, almost circular in outline, and the sepals proportionately broad. The sepals and petals have a cream-white ground, heavily barred with blue-purple, the blue being very evident in the petals. The labellum is pure white, with reddish-violet spotting in front of the crest.

In the description referred to the original form was described as "one of the happiest combinations," and the variety *Theodora* accentuates the remark.

A study of the flower confirms the opinion as to the excellence of *O. crispum*, *O. Pescatorei*, and *O. Harryanum* in hybridising; indeed, these three species play more satisfactory parts than all the other members of the genus put together. *O. Harryanum* favours expansion, firm substance, and decided marking. *O. Pescatorei* tends to give good shape, especially in the broad, flat labellum; and *O. crispum* gives uniformly broad segments and is receptive of the colouring of the other parent. In the variety now under notice the recurring characters of *O. Harryanum*, combined with *O. Pescatorei* through *O. Rolfæae*, are very interesting.

ODONTOGLOSSUM FARMERI.

THIS distinct and showy *Odontoglossum* was raised by Messrs. Armstrong and Brown from *O. amabile* and their *O. King Emperor*, and received the R.H.S. Preliminary Commendation at the meeting on May 16. The hybrid is one of the best of the hybrid *Odontoglossums* shown with a view to securing the new award. The flower is of perfect shape, all the segments being almost equally broad. The inner two-thirds of the sepals and petals are of a rich claret-red, with a decided orange shade, the broad margins being pure white. This and many others of the crosses of complex parentage show a tendency to change the colour of the whole flower instead of arranging the colour in blotches, and new and attractive tints are produced. By an error the exhibit card gave the name as *Odontoglossum Baileyi*, and it was so recorded.

KEELE HALL, STAFFORDSHIRE.

THE recent death of Mr. J. Dempster, of Manchester shipping circles, reminds us that the deceased gentleman some years ago took over Keele Hall, Newcastle-under-Lyme, on a short lease from Mr. Ralph Sneyd, the present owner. Keele has a great interest for gardeners, for in the last century it enjoyed for many years a rare reputation for Grape cultivation, and it was one of the principal show places in the Midlands. The Hall was built by Ralph Sneyd in the fifties, who also planned most of the features of the pleasure grounds, and with his own hands pegged out the numerous paths in the woods that stretch from the Hall itself on the north-west side for a mile and a half in the direction of Butterton. So early as 1850 he appointed as gardener the late William Hill, who at that time was serving under Fleming at Trentham, situated only a few miles distant, and known at that time

by name, at least, in every British garden. In appointing Hill, Mr. Sneyd stipulated that he should grow plenty of good Grapes, as he cared for no other fruit. This fact may partly explain Hill's devotion to Vine cultivation during the 28 years he laboured at Keele. He exhibited Grapes from the Keele vineries at shows in most parts of the country, and on one occasion at least was awarded prizes for them at an exhibition in Paris. He commenced to exhibit in 1853, when he had been but three years at the work. In the two years following he gained sixty-one first prizes at the London shows. But many of Hill's best Grapes were produced subsequent to that date, as he himself states in the following paragraph published in these pages in 1876.

"Many of our best productions have been obtained since 1863. The finest Black Prince and Buckland Sweetwater exhibited on the opening day at South Kensington were the produce of a graft put on Black Hamburg in 1850. These received 1st prizes at South Kensington on the Saturday, and, on the following Wednesday, two 1sts at the Regent's Park, the same Grapes being exhibited. There was something worth competing for at that time. The highest prize I ever received for a single dish of Grapes was at Regent's Park, for Black Prince, £1; and the lowest at the Royal Horticultural Society, South Kensington, 1s. 8d., with the following note:—'I have the pleasure to enclose a remittance of 1s. 8d., being the amount of your prize account for the last show!'"

Nevertheless Hill was not in a position to give his undivided attention to Grape growing, for his appointment preceded the formation of the gardens excepting the centre portions, which included many of the fruit houses and all the vineries. He was engaged with his master in laying out the grounds, plant-



FIG. 144.—WILLIAM HILL, GARDENER AT KEELE, 1850—1878.

ing forest and ornamental trees on a prodigious scale, and the forming of woodland walks. In all these operations his employer took the closest personal interest; he was one of the most energetic of men, and would go into the details of the building of the mansion and of walk planning and tree planting with a freshness that never tired. In these days when the proper training of gardeners is much discussed, it may be of interest to describe Hill's training in his own words:

"I was born at Silsoe, in Bedfordshire, in 1824. My first start in gardening was in the year 1838, at Bedgebury Park, Kent, then the seat of Viscount Beresford, but I was there for a few months only, as my parents left the neighbourhood, and I lost sight of gardening (or was not fully occupied) until March, 1840, when a premium of £10 was paid to Mr. Cockburn, Caen Wood, Highgate, under whom I served for three years. In the autumn of 1843 I left Caen Wood for the Horti-

cultural Gardens, Chiswick, when I entered the fruit department under the late Mr. R. Thompson. While at Chiswick I had an excellent opportunity of becoming acquainted with fruits, particularly Apples and Pears, as the unpacking and arranging for comparison fell to my lot, as also the collecting of scions for all parts of the world. This was Chiswick in its palmy days, when Mrs. Lawrence, Mr. Green, Mr. Cook, and a host of others used to exhibit, and when there was also some good fruit shown, and thousands of visitors. In those days it was not an unusual thing to see the rank of carriages extending nearly to the Broadway, Hammersmith, while the whole of Turnham Green (this was previous to the church being built) was covered, and they extended a long way towards Kew. What a change has come over the scene!

In April, 1845, I left Chiswick for Trentham Garden, under Mr. Fleming, to gain experience in the early forcing houses among Vines, Pines, etc. At this time extensive alterations were going on. In April, 1846, Mr. Fleming was applied to for a young man for the vineries, etc., at Nuneham Park, Oxford, and I left Trentham for Nuneham, where I remained until November, 1849, returning again to Trentham; but previous to this, however, in July, Mr. Fleming had recommended me to the late Mr. Sneyd, with the understanding that I was to remain at Trentham for twelve months previous to going to Keele to become

the usual amount of trimming. Its length is 200 yards, width 10 yards, and height 25 feet. We reproduce the old figures, which give a very good idea of the fine appearance of this marvellous hedge. It was described in the *Gardeners' Chronicle* in 1871 in the following terms:—

"It is kept closely clipped, and in appearance looks like a solid piece of masonry, or a powerful breakwater. One could almost walk on the top of it, so dense is the growth; and at all parts it is like a compact fortress wall."

—a description which applies equally well at the present time.

Another feature of extraordinary interest at Keele is the collection of very large and very old Spanish Chestnut trees on the terrace overlooking the lower portion of the kitchen garden. Half a century ago these veteran trees had many of their great, sprawling branches chained up with infinite care, and faulty places on their trunks protected with huge

NOTICES OF BOOKS.

WOMEN AND THE LAND.*

MANY read with interest the contributions by Lady Wolseley, which appeared last year in the *Nineteenth Century*, and elsewhere, on women's work in gardening and farming. The volume just issued deals with the same subject in a more comprehensive and detailed manner.

The value of women's service in gardens has been abundantly proved, and the only doubts expressed have referred to the utilisation of more labour on farms, beyond the duties connected with dairies and poultry keeping. In brief, the question of physical fitness has been the chief one demanding an answer. It has, however, been overlooked by some opponents that the life of the modern British girl has materially improved, outdoor sports and athletic exercise have resulted in a development that fits young women for much that was beyond their powers previously. To illustrate this, a recent demonstration of women's work on the land was held by the Lindsey County Council at Holton-le-Moor. About thirty women and girls took part, and were engaged in ploughing, threshing, distributing manure, lifting roots, and other operations. Much satisfaction was expressed by the practical men who witnessed the tests, and the results were recorded as "workmanlike and good."

In such an extremely critical time not only is it of national importance that every available area should be cultivated to the best purpose, but it is essential that all labour which can be spared from other pursuits should be utilised to the fullest extent in this direction. Judgment and experience are needed in selecting women for such special occupations, and careful training is of the utmost importance; but women students are mostly quick to learn, and in some respects are more teachable than men. 1

further acquainted with the gardening peculiarities of the soil and the climate of North Staffordshire."

Before Hill's death, in 1878, he had lost his first master, and was serving the Rev. Walter Sneyd, who subsequently appointed as gardener Mr. John Wallis, then gardener to E. M. Mundy, Esq., Shipley Hall, Derbyshire. Wallis remained at Keele for twenty-one years, and, like Hill, he had the misfortune to lose his employer by death. Wallis continued the cultivation of Grapes with marked success for some years, but as time went by other growers competed with him at the exhibitions, and often secured the coveted awards. Wallis grew Peaches and Nectarines in the greatest abundance, and of the best quality. Both these fruits and Figs he exhibited with unvarying success. Mr. Wallis left Keele in 1899, and was succeeded by Mr. Alex. Wright, who was in turn followed by the present gardener, Mr. W. J. Guise.

One of the interesting features at Keele at the present time is the large lean-to Fig house, which is entirely filled with one huge tree of the variety Brown Turkey. We well remember the same house when it accommodated six trees of fair size of as many different varieties. Now all the varieties are borne by the one tree, owing to the system of grafting in the centre of the tree for the primary purpose of maintaining a good supply of fruit-bearing wood, where it is usually only to be found in sparing quantity.

A visit we were privileged to make recently showed that, in spite of some minor alterations, Keele in its main features is much the same as it was even when Hill left it, excepting, of course, that the trees he planted are now, in many instances, first-class specimens of considerable dimensions: for instance, the avenue of Deodar Cedars that now contributes so much interest to one portion of the pleasure grounds. The great Holly hedge (see fig. 145) is still the wonder of all fresh visitors, and in these times of scarce labour it must be very difficult indeed to give it

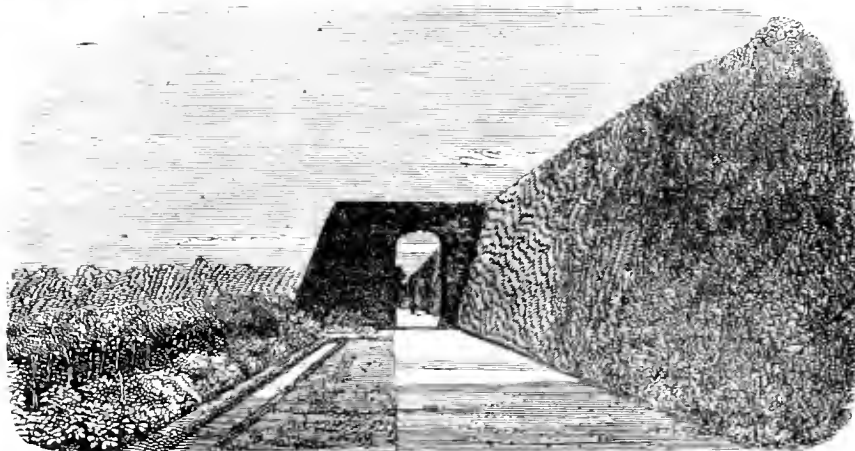


FIG. 145.—HOLLY HEDGE IN KEELE HALL GARDENS, STAFFORDSHIRE.

sheets of lead, and they still appear much about the same to the visitor as then, though possibly a question on the subject might bring out the information that some at least had been compelled to give up the fight in the meantime. There are many fine trees of other species in the garden and park, particularly Ash, Elm, and Oak, which, taken with the magnificent Hollies, afford conclusive proof of the fertility of the somewhat heavy soil. Whilst all the old fruit houses are still in good repair and closely cropped with fruit, the present gardener, Mr. Guise, has introduced a greater quantity of flowers, both indoors and out-of-doors, with the result that the place generally looks brighter even than in the old and glorious days of Hill and Wallis. It may be hoped that Keele—where, it will be remembered, the Grand Duke Michael of Russia resided previous to the commencement of the present lease—may continue always to be counted amongst the more interesting and progressive of Midland gardens.

have had hundreds of women under my direction on land work in several counties, and have invariably had reason for satisfaction with the results, both with respect to speed and efficiency.

The authoress of *Women and the Land* indicates in the course of eleven chapters (224 pages) how women can help to advance the cultivation of land, the course of training needed, the value of co-operation, and the preparatory education desirable for women and girls in villages. Many other cognate subjects are discussed, including rural housing, wages, and local industries, all bearing upon the matter more or less intimately, and the difficulties to be overcome are considered in the right judicial spirit. In fact, much useful information can be gained by a close perusal of this work. The book is well printed in clear type on stout paper, and is appropriately illustrated. C.

* *Women and the Land*. By Viscountess Wolseley. (London: Chatto & Windus.) 1916. Price 5s.

CULTURAL MEMORANDUM.

SUMMER-PRUNING DWARF-TRAINED
APPLE TREES.

SUMMER pruning, done properly, has the most beneficial effect, especially as regards cordon and espalier, or other trained trees. The illustrations, fig. 146, A-D, will help to show proper methods. The branches should be kept at 12 inches distance apart, and the leading growths shortened to insure a proper breaking of the buds throughout the whole length of the branches, which, of course, results in side shoots, with which our present remarks may chiefly be taken to apply.

The side shoots, fig. 146, A-e, should be gone over during the season of early growth, when they have made six to eight leaves, and pinched back with the finger and thumbnail to five leaves.

young and vigorous, or three will suffice on old trees or those of moderate vigour. The reason for leaving four buds is that two must make some growth, while the two lower ones make only a little wood and a few leaves, practically spurs, to develop into fruit-buds the following year.

The reason for pinching side shoots is to transform them into spurs, instead of allowing them to grow freely until mid-July or later, and then cut them hard back to two buds, causing them to push fresh growth from one or both, while giving a check to the tree by removing so much foliage at one time. The result is a thicket of shoots, for the close pruning in winter to a couple of buds means two strong shoots from each one then shortened, and the object of having bearing spurs near to the branch is frustrated. The thing is to get the spur and bloom-buds formed on them, for as soon as a blossom-bud has de-



FIG. 146. SUMMER PRUNING OF DWARF-TRAINED APPLE TREES.

FIRST YEAR.—A, one-year-old extension branch; a, point of shortening at preceding winter pruning; b, leading or continuation of branch growth; c, lateral pinched to one leaf; d, short lateral growths that need not be stopped; e, side shoots pinched at fifth leaf; f, subsequent growths stopped at second leaf; g, short stubby shoot of three to four joints or leaves, not pinched; h, very short growth usually forming spurs naturally; i, points of winter pruning; B, natural spur; j, blossom-bud in centre of leaves; C, shoot with bold bud at extremity; k, to be left intact, being a blossom-bud.

SECOND YEAR.—D, branch A a year older; l, continuation of branch or extension growth; m, side shoots pinched at fifth leaf and subsequent growths at second leaf; n, short, stubby shoots or spurs on one-year-old wood; o, one-year-old pinched side branches; p, growths from uppermost buds pinched first to five leaves and subsequent growths to two leaves; q, short shoot forming spurs; r, natural spurs advanced towards blossom-bud formation; s, points of winter pruning; E, spur B in year following blossom-bud formation; t, short, stubby shoot in continuation of spur; F, shoot C in year following bearing fruit at point; u, feeble growths, some of which push shoots in current or following year similar to C, and form blossom-buds at their extremities; v, shoot from base of truss of fruit.

The shoots will push growths from one or two of the upper buds, and these laterals should be pinched back to two leaves. If the trees are very vigorous, or the autumn wet, a third pinching may be needed. The immediate result is to keep the side shoots within bounds. The leading, or extension, shoot will be clean and vigorous, and the growths from the buds lower down will be well nourished. At the autumn or winter pruning of these side shoots, four buds are left on each. And, if the tree be

veloped on a spur the growth extending beyond it may be removed, so as to make the tree neat and prevent over-crowding of the foliage. No buds beyond the blossom-bud are necessary to draw the sap into it, the spur being provided with its own foliage and also the truss of fruit that follows, while a blossom-bud cannot be forced into wood growth by close pruning.

The foregoing remarks apply to such fruits as are grown upon the spur system—Apples, Pears, and Plums. G. A.

The Week's Work.

THE FLOWER GARDEN.

By WILLIAM F. ROWLES.

DRYING AND STORING BULBOUS PLANTS.—As soon as the flowers of *Ranunculus* and *Anemone coronaria* are over, lift the roots carefully and dry them ready for storing, taking care not to break the "claws." It is better to lift the corms each year than to leave them in the ground. The foliage of Tulips and Hyacinths is now sufficiently yellowed to permit of lifting the bulbs, which must be well dried to permit the foliage and outer, loose skin to be removed. Store the bulbs in a cool place until they are wanted for planting in the autumn.

CARNATIONS.—Attach to neat sticks all Carnation flower-spikes. Where the foliage is long and has an undue tendency to sway about, support this also. For such floriferous varieties as Raby Castle use short, twiggy Pea sticks. They may render the cutting of the flowers more difficult, but this disadvantage is outweighed by the saving in labour effected by this method, especially in the case of those plants which have been left to flower for the second year, which give flowers in abundance. Run the hoe through the soil before placing the sticks in position, as hoeing will be somewhat difficult afterwards. Staking of this character should be done, if possible, while the plants are in bud, and before the growths draggle on the ground.

CERASTIUM TOMENTOSUM.—This old-fashioned flower can be used to good effect in the most modern gardens. It is invaluable for the wall-garden; it makes a good edging to a border, and is useful for forming masses at the front of the herbaceous border, where it may overhang the gravel path. A place can also be found for it in the rock-garden. It is suitable for planting between stepping-stones, and may be used as a groundwork for many deciduous shrubs, such as *Hippophae rhamnoides* (Sea Buckthorn). Besides being propagated from cuttings, the plant may also be raised from seeds sown now, either out-of-doors or in a frame containing a bed of moist, fine soil.

SEASONABLE SOWINGS.—Sowings may be made under the same conditions as for *Cerastium tomentosum*, of *Alyssum saxatile*, and *A. argenteum*, *Iberis sempervirens*, Hollyhocks, Brompton Stocks, Tree Lupins, Delphiniums, Dianthus, Helianthemums, Primroses, and Polyanthus. These plants will be handy for filling gaps, or for using in parts of the garden where trueness to colour and type is not absolutely essential.

THE ORCHID HOUSES.

By T. W. BRISCOE, Gardener to W. R. LYSAGHT, Esq., Castleford, Chepstow, Gloucestershire.

SUMMER-FLOWERING CYPRIPEDIUMS.—The following *Cypripediums* flower in summer:—*C. barbatum*, *C. callosum*, *C. c. Sanderae*, *C. Lawrenceanum*, and its varieties *Hycanum*, and *hackbridgensis*, *C. Curtisii*, *C. ciliolare*, and several hybrids, of which the best is *C. Maudiae*. Few Orchids succeed better than *C. Maudiae*: in many collections it is represented by dozens of specimens and is easily increased by division. *Cypripedium* blooms, as a rule, remain in full beauty for a considerable period; but in the interest of the plants, and particularly the albino varieties, the spikes should be cut after they have remained for a reasonable time. When the plants have recovered from the effects of flowering, and the new growths are about to form roots, repotting may be done. These Orchids do not require such a retentive compost as those of the *C. insigne* group, neither do they require it in such quantity, as they are all more or less shallow-rooting. Half fill the pots with clean, broken potsherds for drainage, and use receptacles only just large enough to accommodate the roots. The compost should consist of good fibrous peat or *Osmunda*-fibre,

two parts, Sphagnum-moss, one part, and a moderate sprinkling of coarse sand. Both the fibre and Sphagnum should be cut up moderately small, and made firm around the base of the plant. These Cyripediums should never be pot-bound, or the flowers will be poor in quality. On plants that have been left undisturbed for several years there will be a number of old growths that have flowered. These should be cut away, with the exception of one behind each lead or growing point, and utilised for propagating purposes. They should be placed in a warm, moist house or seed-frame until they produce growing points, when they may be placed in small pots. Another method is to sever the rhizome at intervals, a few weeks before it is intended to repot the plant. This invariably causes fresh growth to develop, which will be sufficiently advanced for repotting at the same time as the plant itself. If desired, the portions may be made into one compact specimen. For a few weeks after repotting keep the surface of the soil only just moist, but when the roots approach the rim of the pot water them freely. Grow the plants on the shady side of a warm house, and keep their surroundings moist. In summer spray the foliage lightly whenever the weather is hot. Such species as *C. Lowii*, *C. Stonei*, *C. Rothschildianum*, *C. Parishii*, and *C. praestans* may also be repotted now. It is not advisable to spray these plants overhead, and in watering care must be taken to prevent moisture accumulating, either in the young growth or axils of the leaves. *C. niveum* is a pretty, summer-flowering species, which should be repotted in fibrous loam, with a fair quantity of mortar rubble intermixed.

THE HARDY FRUIT GARDEN.

By J. G. WESTON, Gardener to Lady Northcote, Eastwell Park, Kent.

BUSH APPLE TREES.—All fruit trees are now making rapid growth and require attention, both in thinning out superfluous fruits and in pinching out side growths. The earliest varieties to ripen should be taken in hand first for thinning. The best of these are Mr. Gladstone, Beauty of Bath, Lady Sudeley, and Langley Pippin. The latter is a recent introduction of Messrs. Veitch, and is a cross between Cox's Orange Pippin and Mr. Gladstone. The tree is of healthy growth, fruit small to medium size, and of juicy, refreshing flavour. St. Everard, ripening in September, is a promising new early variety which was awarded a First-class Certificate when shown before the R.H.S. Closely following these are the varieties James Grieve, Worcester Pearmain, and St. Edmunds Russet. The first is an excellent variety, with tender, juicy flesh of good flavour, of healthy, vigorous growth, and a fairly regular bearer. The very small fruiting varieties, of which Yellow Ingestre is a good example, need not be thinned so much, as the fruit never grows very large; in fact, none of the early varieties requires so much thinning as the later ones. Amongst the early culinary sorts, many of the Codlin type, like Lord Grosvenor, set far too many fruits in an average season. If these are not well thinned early in the summer, a large crop of very inferior fruits is produced. If overcropping is allowed for a season or two, the trees will fail to make satisfactory growth, and eventually fall into bad health. This may be avoided by systematic thinning, which should be carried out according to the age and constitution of the tree.

RED AND WHITE CURRANTS.—These bushes, having now practically made the season's growths, should be summer-pruned in order to admit the sun and air to the interior. Stop all side growths at the fourth leaf, leaving the leading shoots for the present. Vacant places on walls can be filled with trees trained as cordons. These will not only produce finer fruits than the ordinary bushes, but if planted against walls facing north or north-east, the fruit will hang on the trees until quite late in the autumn, thus prolonging the season. If the soil is of a cool, retentive nature, Red Currants will hang on a north wall for some weeks after ripening in capital condition. During hot and dry periods it will be necessary to water the trees, or the fruits will shrivel. All growths on the cordons should be

stopped as recommended for bushes. Red or White Currants may also be grown as standards along the edge of the walks in the fruit garden. Grown in this way they do exceedingly well, are easily protected from the birds, and are very attractive when laden with fruit. If aphid is troublesome, see that the bushes are thoroughly cleansed before the fruit begins to colour. All nets should be placed early in position, as the birds begin to carry off the fruit even before it begins to change colour. Keep the surface soil between the bushes well hoed, and apply fresh mulching if necessary before placing the nets.

BLACK CURRANTS.—There is no necessity to thin the shoots of Black Currants, as they require quite a different method of treatment from that accorded to Red and White Currants. The wood can be left till the fruit is cleared off the bushes, when the annual pruning should be given. This consists of cutting out as much of the old wood as can be spared, the strong young shoots starting from the base being retained in sufficient numbers to furnish the tree. These young shoots produce the best fruit in the following season.

THE KITCHEN GARDEN.

By E. R. JAMES, Gardener to the Rt. Hon. LORD NORTH, Wroxton Abbey, Banbury, Oxfordshire.

GLOBE BEET.—Make a sowing of Globe Beet to furnish roots for storing; spaces rendered vacant by the removal of early crops may be utilised for the purpose. In warm situations serviceable roots are obtained from sowings made as late as the middle of August. Beet roots may be lifted at any time when they are large enough for use; large, coarse specimens are invariably tough and poor flavoured. Late plants do not require a severe thinning, as the short season only permits of their partial development.

EARLY CELERY.—Remove the paper collars from Celery plants at frequent intervals and examine the plants. Take away the lower leaves and all lateral growths. Slugs and worms must be sought for. Aphid is sometimes present at this season in the heart of the plants, often causing, if unchecked, premature decay. The removal of the paper collars offers a good opportunity for spraying the plants with a mixture of soft soap and quassia. Spray early in the day, and replace the collars during the afternoon when the plants have dried. The collars should be loose enough to permit stem development, yet tight enough to maintain the leaves in an upright position.

COLEWORTS.—Make a final sowing of this useful vegetable, preferably in cool ground, as both mildew and the Turnip beetle are often troublesome at this season. Mildew will completely destroy seedling Brassicas in a few days. For this reason spray the seedlings immediately mildew is detected with the soft soap and sulphur mixture already recommended.

THINNING CROPS.—The work of thinning should be completed while the soil is still moist. Examine all seedlings frequently, and dust them with soot or some other deterrent against slugs and other insect pests.

FRUITS UNDER GLASS.

By F. JORDAN, Gardener to Lady Nunburnholme, Warton Priory, Yorksire.

STRAWBERRIES.—Make preparations for layering the runners for next season's plants, as success with pot Strawberries depends largely upon having the plants in their fruiting pots early. Some layer the plants direct into 5 or 6-inch pots, and this system has the advantage of saving labour, but unless great care is taken in watering there is a danger that the soil will become soured. The use of small pots for layering has many advantages, as they may be placed closely together in two or three rows between every other row of Strawberries, a good, strong runner being secured in each small pot. In a fortnight or three weeks the plants will be ready for transferring to their fruiting pots. Use a rich compost: fairly strong loam with the addition of old lime rubble, bone meal and a few fine oyster-shells for the free passage of water is

suitable. Mix the compost a month before it is needed, as it should be dry to permit of firm ramming. Let the pots be clean, and carefully crocked, and give a dash of soot over the crocks to deter worms from entering the drainage-hole.

POT VINES.—Canes which have grown to the desired length for next year's fruiting should be stopped, if this has not already been done. Take every care to preserve the main leaves, as on these depends the plumping of the buds for next season's crop, and the maturation of the wood. Feed the plants with weak manure-water and rich mulchings, but take care the roots do not enter the plunging material or they will get out of control. Ply the syringe vigorously to keep the foliage clean, and supply moisture by damping the paths and other available spaces.

MELONS.—Any available pit or frame may be used for the growing of late Melons, but a little bottom-heat is essential to the setting and ripening of the fruits; almost anything that will ferment may be used to supply bottom-heat, and this, combined with early closing of the frames, will maintain a sufficiently high temperature. Choose a variety that sets freely and ripens quickly. Plant in good loam free from animal manure, and feed the roots moderately when the fruits are swelling, but when they are ripening use clear water and only an amount sufficient to prevent flagging of the leaves. To obtain very late Melons in houses, sow seeds singly in small pots. The plants will be ready for planting out next month.

PLANTS UNDER GLASS.

By E. HARRISS, Gardener to Lady Wantage, Lockinge House, Wantage, Berksire.

CHRYSANTHEMUMS.—To save labour in watering Chrysanthemums grown for cut blooms, the plants should be grown in a well-prepared border. The remainder of the plants should be transferred to their flowering-pots as they become ready, and arranged in their summer quarters. Syringe the newly potted plants twice a day in hot weather, and, as a precaution against insect pests, spray with an insecticide once a week. Pay timely attention to the work of staking and tying.

HUMEA ELEGANS.—Plants of *Humea elegans* are developing their flowers. The pots are filled with the roots, therefore stimulants may be afforded more liberally than hitherto. Continue, however, to water the soil with great care, for, if this precaution is neglected, some of the plants may yet die. If it is desired to retard the flowering, the plants may be stood out-of-doors in a shady position. When the seedlings are large enough, transfer them to 2½-inch pots, and grow them in a cool house, where they will be shaded from bright sunshine.

STREPTOSOLEN JAMESONII. Young plants of *Streptosolen* intended to flower next season should be potted on as required, using a compost consisting of loam, leaf-mould, and coarse sand. Stop the strong growths occasionally to keep the plants shapely. It is necessary that the shoots should be well ripened by the end of the season, or the plants will fail to flower; to ensure ripened growth stand the plants out-of-doors in a sheltered position during the latter part of the summer.

LAPAGERIA.—Train the young growths of *Lapagerias* to their supports before they get out of hand. Old, established plants need an abundance of stimulants when in active growth, and especially if the roots are in pots or tubs. Syringe the plants vigorously with rain-water during hot weather, and keep them free from aphid by occasional fumigations with a nicotine compound.

LILIUM SPECIOSUM.—If not already done, support the young growths of *Lilium speciosum* to stakes. The plants are well rooted at this stage, and should be afforded stimulants: weak soot-water will impart a good colour to the foliage. When roots appear on the surface, top-dress them with a little rich compost. The plants may be plunged in a bed of ashes in a sheltered position. Syringe the foliage once a week with an insecticide.

EDITORIAL NOTICE.

ADVERTISEMENTS should be sent to the **PUBLISHER, 41, Wellington Street, Covent Garden, W.C.**

Editors and Publisher.—Our Correspondents would oblige by delay in obtaining answers to their communications and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the PUBLISHER; and that all communications intended for publication or referring to the Literary department, and all plants to be named, should be directed to the EDITORS. The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.

Illustrations.—The Editors will be glad to receive and to select photographs or drawings, suitable for reproduction, of gardens, or of remarkable flowers, trees, etc., but they cannot be responsible for loss or injury.

Special Notice to Correspondents.—The Editors do not undertake to pay for any contributions or illustrations, or to return unused communications or illustrations unless by special arrangement. The Editors do not hold themselves responsible for any opinions expressed by their correspondents.

Local News.—Correspondents will greatly oblige by sending to the Editors early intelligence of local events likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of horticulturists.

Letters for Publication, as well as specimens of plants for naming, should be addressed to the **EDITORS, 41, Wellington Street, Covent Garden, London.** Communications should be written on one side only of the paper, sent as early in the week as possible, and duly signed by the writer. If desired, the signature will not be printed, but kept as a guarantee of good faith.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, JUNE 27.—R.H.S.'s Red Cross Sale, Vincent Square, Westminster (3 days).
Roy. Agr. Soc.'s Show at Manchester (5 days).

FRIDAY, JUNE 30.—Nat. Rose Soc. Show, Botanic Gardens, Regent's Park.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61.5°.

ACTUAL TEMPERATURE:—*Gardeners' Chronicle* Office, 41, Wellington Street, Covent Garden, London, Thursday, June 22 (10 a.m.): Bar. 30.01°; temp. 64.0°. Weather—Sunny.

Plants in Health and Disease.*

The lectures of which this little book is a summary were undertaken with the object of helping those who are engaged in endeavouring to increase the productiveness of their gardens. Although the professional gardener trained in the hard school of experience may be able to dispense with a knowledge of the structure and precise mode of life of plants, the amateur whose experience of gardening is more slender will find his path towards success smoothed if he possess a sound knowledge of the elements of plant life and of the causes of disease.

The authors devote the first six lectures to a simple account of the normal life of plants. The study of the healthy life of the plant is followed by chapters on the more important diseases which destroy vegetation or reduce the yield of the crops. Thus in chapter VIII., after a general account of the life-history of fungi, the damage caused to seedlings by the damping-off fungus *Pythium de baryanum* is described, and the method of prevention by partial sterilization of the soil of the seed-bed is recommended. Reference

might also have been made in this connection to experiments—conducted in America apparently with success—in the use of formaldehyde and also of sulphuric acid for destroying the spores of this fungus in soil used for seed-raising.

A good account is given of the late blight disease of Potatoes, but the recommendation to grow varieties which are locally resistant to the disease will, we think, lead the cultivator who follows the advice on a long and not very fruitful chase. Such varieties may exist, but our knowledge of them is very slender. Care in planting—rejecting tubers which show on cutting the brown marks of the disease—is practicable in small gardens; but we fear that it will be a long time before the gardener who grows a small plot of Potatoes will be convinced that the trouble of spraying with Bordeaux mixture is worth the while. Nothing short of "co-operative spraying" will, we think, meet this objection—even if that will.

Of rusts the writer describes first that of Wheat, and then refers to Hollyhock rust. The suggestion that by destroying diseased leaves as soon as they appear the disease may be kept in check will not accord with experience in many parts of the country. The truth is that an admirable and valuable piece of scientific work is and has been long waiting for the mycologist. The disease is ubiquitous in this country, and has made Hollyhock growing in America impossible. No one has yet—so far as we know—confirmed the statement that the disease is carried in the seed. That it may occur on the fruit coat is, of course, certain; but what we want to know is whether it occurs actually within the seed coats.

The later chapters deal with animal pests of the soil, and give a no less admirable account of the animals which damage crops. The price of the book no doubt precludes the use of illustrations; but the absence of figures is a defect of an otherwise excellent work. We welcome it particularly because it shows an approach on the part of academic biologists to the promising fields of horticulture.

It is not only that the general population of this country has become urbanised, and not to it only is the cry, "Back to the land" apposite. The same phenomenon is visible among our biologists. They also are too urban, and it would be a good thing for everybody if some of them would get back to the land. We are glad to see Manchester casting its eyes in that direction. The confidence of the gardener in the advice given him by biological specialists would not be lessened by the knowledge that the specialists knew how to cultivate the plants they undertake to own.

CITY OF LONDON ROSE SOCIETY.—The secretary of the City of London Rose Society informs us that, owing to the exceptionally cold weather, the annual show, originally fixed for the 27th inst., is postponed until July 7.

GOLD MEDAL FOR NEW ROSE AFTER TRIAL AT BAGATELLE.—Messrs. ALEX. DICKSON AND SONS, LTD., inform us that they have received information from Paris that, on the 15th inst.,

at the judging of the new Roses planted at Bagatelle for trial, they were awarded the Gold Medal for the best new Rose, the variety being Mrs. Wemyss Quinn.

FRENCH HORTICULTURAL EXHIBITION.—The Paris Spring Show was held, as announced, in the hall of the National Horticultural Society, and proved a complete success, a large number of visitors having attended. The exhibition was limited in scope on account of the restriction of space, but every available place was utilised to its utmost capacity. Messrs. VILMORIN showed a superb group of flowering plants, and many other well-known French horticulturists were represented by exhibits.

HORTICULTURAL EXEMPTIONS IN FRANCE.—The Horticultural Society of the Dordogne, in France, has passed a resolution recommending to the Government the extension to professional gardeners of the exemptions granted to agriculturists, and advising horticultural societies to send in lists of their members who have joined the forces.

FOREST NURSERY NEAR ABERDEEN.—Following upon a communication from the Board of Agriculture, the members of the Forestry Committee of the Aberdeen and North of Scotland College of Agriculture expressed their willingness to assist in the raising of young trees from seeds by the establishment of a nursery at Craibstone. The subsequent negotiations have resulted in its being arranged that an area of 1½ acre be laid out for this year, and an addition made next season if required. The report of the committee has been adopted by the Governors. Sir JOHN FLEMING, in moving the adoption of the report, mentioned that a part of the timber on Craibstone had been sold to the Home-grown Timber Committee for £2,594, and that timber valued at £2,000 remained. The original price paid by the Governors for the timber on Craibstone was only £1,300.

EARLY POTATOS IN SCOTLAND.—At Strath Farn, south of Girvan, Ayrshire, the first early Potatoes in Scotland were lifted on June 15, the same date as in 1915. The crop is said to be a good one in every respect.

FLOWERS IN SEASON.—We have received from Messrs. JAS. JEFFERIES AND SONS, Cirencester, a selection of their fine *Calceolaria* Cotswold Hybrid in several pleasing colours. The plants of this hybrid flower very freely; the habit is similar to that of *C. Clibranii*, one of the parents, but the colouring is varied, ranging from clear lemon-yellow through gold to light bronze and brown. In some cases the flowers are spotted through the influence of the herbaceous variety which was the other parent.

"SHAKESPEARE GARDEN" FOR NEW YORK.—At the request of Mr. PAGE, the United States Ambassador, the Mayor of Stratford-on-Avon is sending two Warwickshire Oaks, which are at present growing within a few yards of the house where SHAKESPEARE was born, to New York, where a "Shakespeare Garden" is to be established. The garden will contain every plant mentioned in SHAKESPEARE'S plays.

AGRICULTURAL COMMITTEES IN FRANCE.—The French Minister of Agriculture has appointed a committee in each Commune to deal with the question of food production and economy of labour. It is fully realised in France that it is a public duty to leave no inch of French soil untilled, but, with all the eligible men at the front, it is impossible to maintain the former high standard of agricultural production. In spite of the strenuous efforts which have been made, there is some fear that the coming harvest will be below the average. The committee are chiefly devoting themselves to the task of bringing into cultivation land which is at present uncultivated, and, in spite of the difficulties presented by shortage of labour, good results are already recorded in various districts.

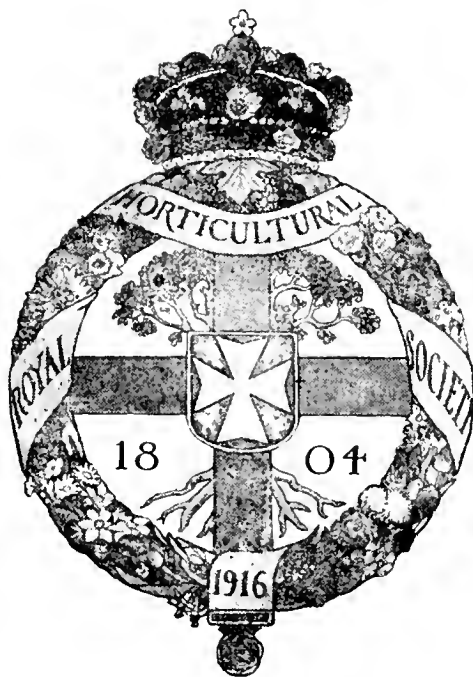
* *Plants in Health and Disease.*—An abstract of a course of lectures delivered in the University of Manchester, 1915-16, by F. E. WEISS, D.Sc., A. D. IMMS, D.Sc., and Wilfred ROBINSON, M.Sc. (University Press, Manchester, 1s. 6d. net).

EARLY MAIZE.—Reference is made in *Plant Immigrants*, No. 115, November, 1915, to Early Malcolm Maize, a selection of the Malakoff Maize introduced from Russia in 1902, and noteworthy as being the only variety which matures regularly in Ottawa. It is also recorded that the second generation of a cross between the Early Malcolm and another quick-ripening variety, Early Adams, has produced in the second generation a variety which ripens ten days earlier than either parent.

FRENCH TRUFFLES.—The *Journal of the Society of Arts* gives an interesting account of how the truffles of Périgord and Sarladais are gathered for sale. The districts of Périgord (Department of Dordogne) and Sarladais are famous for their truffles. These highly-prized fungi make their appearance during the first days of August, and are gathered from then to the end of March. They are found under a variety of Oak called the Truffle Oak (*chêne truffier*), also near the Evergreen Oak (*chêne vert*), and the Hazel (*noisetier*). Those who make a speciality of gathering truffles are called "caveurs de truffes." They search for them with trained dogs or pigs, the animal locating the hidden truffle by scent. The truffles are gathered every day or two and carried by the "caveur" to the nearest market town, where he sells them to commission merchants, who buy for the large dealers. The normal price for truffles is 5 francs per kilogramme (about 4s. per lb.), but sometimes the "caveur" receives as much as 12 and 15 francs (9s. 6d. and 12s. per lb.). The first-of-the-season truffles are called "truffes à la marque," and are inferior in quality to those gathered later. "Truffes à la marque" are black outside and white inside, and have little or no fragrance. With the appearance of cold weather the truffles improve in quality and acquire a greater fragrance. The fine-quality truffle is black outside, black and grey grained inside (*noire marbrée*). The truffles grown in Périgord and Sarladais possess the most fragrance, and are generally superior to those grown in other sections of France. In 1913—the latest year for which detailed statistics are available—France exported 451,500 lb. of fresh, dried, and pickled truffles, 21,600 lb. of which went to the United States. These shipments had an average value of about 5s. 6d. per lb.

THE R.H.S. RED CROSS SALE.—The committee in charge of the preparation of the catalogue of this sale is to be congratulated on an excellent piece of work. The coloured cover design in particular excites our admiration. As is shown by the illustration (which we reproduce by special permission of the proprietors of *Punch*), Mr. BYAM SHAW's design is both apposite and pleasing, and all gardeners who are anxious—and who is not?—to make the sale a success should at once purchase a copy of the catalogue. The dedicatory verses, written by Sir OWEN SEAMAN, editor of *Punch*, which we quote below, express in words of exquisite tenderness the thought which, though inarticulate, is in the minds of all, who, in spite of the sadness of these times, continue in their leisure to labour in their gardens. Once again we appeal to all who grow plants to attend the sale, and by their bidding benefit the Red Cross. There are plants for all tastes and all gardens. Sir DAVID PRAIN sends plants from Kew, Professor BALFOUR gives of the treasures of the Edinburgh Botanic Gardens, and Sir FREDERICK MOORE sends a valuable consignment from Ireland. Sir ARTHUR HORT and Mr. DYKES give Irises of their best. Mr. REGINALD CORY presents succulent plants in great variety, Mr. ELWES offers the best of his Cotswold garden to the highest bidder, Lady NORTHCOTE sends Carnations, for the growing of which the gardens of Eastwell Park are famous, Major A. A. DORRIEN-SMITH, D.S.O., provides

New Zealand Olearias, Mr. E. A. BOWLES offers some of the bulbous plants which he grows and describes so well, the Hon. VICARY GIBBS presents rare hardy shrubs and trees, Mr. F. R. S. BALFOUR gives many of the rare Conifers of his remarkable collection, Mr. W. LAURENCE BRADBURY offers the original of Mr. BYAM SHAW's cover design, and Sir OWEN SEAMAN the manuscript of his dedicatory verses. The contributions from the horticultural trade are on the most liberal scale. The catalogue has been printed at cost price by Messrs. BRADBURY, AGNEW AND CO., and Messrs. PROTHROE AND MORRIS are most generously giving their services as auctioneers, and are undertaking to execute commissions for those who are prevented from attending the sale. At each interval cut flowers and bouquets will be on sale. Admission is by catalogue only, and the catalogue may be had from the Secretary, R.H.S., Vincent Square, Westminster, price 2s. 6d.



FLOWERS FOR THE RED CROSS.

[Lines written for the Catalogue of the Royal Horticultural Society's Sale, to be held at the Society's Hall, in Vincent Square, on June 27, 28, and 29, for the benefit of the Red Cross.]

THINK not that Earth unheeding lies

Tranced by the summer's golden air,

Indifferent, under azure skies,

What blows of War her children bear.

She that has felt our tears like rain,

And shared our wounds of body and soul,

Gives of her flowers to ease our pain,

Gives of her heart to make us whole.

O. S.

THE NATIONAL ROSE SOCIETY AND THE RED CROSS.—The Great Summer Show of the National Rose Society is to be held in the Royal Botanic Gardens, Regent's Park, on Friday, June 30, and the takings at the gate on that occasion will go to the funds of the British Red Cross Society. A large attendance is anticipated, and the Society hope that a very substantial sum will be secured for this excellent object, which appeals to all at the present time.

CATS AND ASPARAGUS.—In respect to the note by a correspondent (p. 301) on the eating of growing Asparagus by a cat, another correspondent points out also that cats are exceedingly fond of cooked Asparagus, and will eat the stems, including the hard portion. This is our own ex-

perience, and we believe it is a fact that no other vegetable is so acceptable to the feline race, which, in this matter at least, may be congratulated on its good judgment.

"BOTANICAL MAGAZINE."—The issue for May contains plates and descriptions of the following plants:—

RHODODENDRON DECORUM, tab. 8,659.—This handsome Rhododendron was discovered by DELAVAY in 1837, in Yunnan, China. He sent seeds to the Jardin des Plantes, Paris, where plants were raised, and from this source specimens were obtained for Kew Gardens. Subsequent collectors in China obtained further specimens, and the plant is now fairly common in cultivation. *R. decorum* forms a shrub about 16 feet high, and bears trusses of large-mouthed, white blooms, sometimes tinged with a greenish shade, and occasionally flushed with rose-colour. The head of about ten blooms has a very stately appearance.

PENTSTEMON RUPEOLA, tab. 8,660.—This striking Pentstemon is a native of dry, rocky cliffs on Mount Rainier, Washington, U.S.A. When first discovered, it was regarded as a variety of *P. Newberryi*, to which it is closely allied. The plant is dwarf, with prostrate, branching growths, bearing clusters of rosy-carmine flowers at the ends.

CYTISUS RATIBONENSIS, tab. 8,661.—This species of *Cytisus* is an old garden plant, but is often confused with *Cytisus biflorus*, itself sometimes considered a variety of *C. ratibonensis*; the limits of the two are not always distinguishable. *C. ratibonensis* flowers freely early in the year, and as the yellow blooms are very attractive, the plant is extensively cultivated, and has been grown at Kew for at least seventy years.

ERIA TOMENTOSA, tab. 8,662.—The habitat of this Orchid is not definitely known; but from the circumstance of its having been received with *Coelogyne pachybulbon*, Siam is regarded as its country of origin. The species is closely allied to *E. ornata*, but it has shorter and broader bracts, differently coloured flowers, and narrower leaves. The scape is many-flowered, and covered with brown tomentum, including the exterior of the flowers. The most showy features are the orange-red bracts and reddish lip, the general colour of the flower being greenish-yellow.

The issue for June contains the following:—

ALOE ARBORESCENS VAR. NATALENSIS, tab. 8,663.—*A. arborescens* is a well-known garden plant, originally described in MILLER's *Gardeners' Dictionary*. The variety *natalensis* is one of the short-stemmed forms of the plant, and is considered by some a distinct species. It was grown in Amsterdam as long ago as the beginning of the eighteenth century, so that the variety has almost as long a garden history as the type. Besides being of dwarf habit, the leaves are almost flat, instead of being channelled near the middle, and the spike is conical instead of more or less cylindrical. *A. arborescens* var. *natalensis* has been discovered wild both in Natal and in Komgha. The inflorescence of orange-scarlet flowers is very striking, and the plant, like all the varieties of *A. arborescens*, is easy to cultivate.

SAXEOTHAEA CONSPICUA, tab. 8,664.—LOBB discovered this interesting Conifer in Chili in 1846, and it was named by Dr. LINDLEY in honour of the Prince Consort. It is the only representative of the genus. It has affinities with *Taxus*, but the branches are more pendulous and looser than in most Yews. The foliage is very like that of the Yew. Although the tree is not common in cultivation, it is found in gardens in the south and south-west of Scotland, and grows well in the neighbourhood of Dublin.

RHODODENDRON CHARITANTHUM, tab. 8,665.—This species is a near ally of *R. yunnanense*, but it has not the hairs on the surfaces and margins of the leaves which characterise the

older species. The plant described was raised at Kew from seeds received from the Arnold Arboretum in 1909; it flowered in 1915, and appears to be quite hardy, thriving in sandy loam and peat. The plant forms a sparingly branched shrub with long and narrow foliage; the blossoms are a delicate rose colour, blotched with red spots within on the upper portion of the corolla, and the anthers a vivid carmine.

CAMPANULA ZOYSII, tab. 8.666.—This charming plant was illustrated and described in the *Gardeners' Chronicle* for August 15, 1896, when it was new to cultivation (see fig. 147). The flowers are of a light blue colour, and very peculiar shape, the tube being somewhat angular, contracted at the throat, and with five short, triangular lobes. The stamens are short, and occupy the bottom of the flower tube, while the glabrous style is as long as the tube. In the young state the flowers are pendulous, but gradually become erect. The plant is a native of the Austrian Alps, and is at home at an altitude of 6,500 to 9,000 feet above sea-level. It has long been in cultivation at Kew, where it is thriving on the Rock garden.

HOME CORRESPONDENCE.

The Editors do not hold themselves responsible for the opinions expressed by correspondents.)

A HEAVY CROP OF PEACHES AND NECTARINES.—The year 1916 will long be remembered amongst gardeners as the worst they have ever experienced with Peaches and Nectarines. In all parts of the country the crop has been more or less a failure, particularly with mid-season and late varieties under glass, but to some extent with outside trees as well. It is, indeed, an exception to find heavy crops, but a remarkable example of prolific bearing is to be seen at Stoke Poges, in the gardens of Stoke Park. About the first week in June the writer had the pleasure of visiting these beautiful gardens, and amongst other objects of great interest which Mr. Lane Jackson showed him was the magnificent crop of Peaches and Nectarines, both inside and out. Nothing could be finer. In one house a tree of Early Rivers Nectarine, planted about 17 years ago, and measuring about 14 by 12 feet, was bearing a crop of over 350 fruits of exhibition size, splendid colour, and of extra fine flavour. This is the average annual crop. Another tree of the same variety brought in from outside last November, and measuring 15 by 11 feet, is carrying 150 fruits of great size and brilliant colour. All the trees in several houses are equally heavily cropped, with the promise of the fruit being of exceptional size. Mr. E. Jennings, the very able gardener, stated that he started the houses in the first week in February with a night temperature of 45°, gradually increasing it, and by the end of May the earliest fruit was ready for use. Before starting the trees, the borders are given a good top-dressing of fresh soil and chemical manure; they are copiously watered, and kept well watered afterwards. The only tree showing signs of insect or fungous attack was a tree of Royal George Peach on an outside wall. The variety is so subject to attacks of mildew and other fungi that, in the writer's opinion, it is not worth growing. S. T. W.

"WITCH'S BROOM" ON THE WILLOW.—This curious growth, which is caused by the insect *Eriophyes triradiatus*, is unfortunately more plentiful this season than ever. In the London area Willow trees suffering severely from repeated attacks are to be found, and nowhere probably is it more plentiful than in some of the larger parks and on Hampstead Heath, where hardly a tree has escaped. Willow trees that were quite free from the insect last season are now seriously damaged, and two at least of those on which the growths appeared nine years ago have succumbed to the annual attacks. With the exception of the Goat Willow (*Salix caprea*), most others, both species and hybrids, are attacked, and not only in the Metropolitan area but far into the country as well. Spraying with several kinds of insecticides has done little good, but pruning off and burning all attacked

shoots in the autumn have been followed with good results. This is difficult, especially in the case of large trees, but at present it is the only known way of keeping the insect in check and is to be recommended. A. D. Webster.

THE INTRODUCTION OF THE DAHLIA (see p. 247).—The following note—taken from *The Floricultural Cabinet* for November, 1858—may be of interest to Mr. C. Harman Payne:—"The First Double Dahlias.—Figures of a single and double Dahlia have been found in an old work on the natural history of Mexico, published at Rome in 1651. In this work there is a very correct figure of a double Dahlia, under the name of *Cocoxochitl*, with violet-coloured ray florets, and a very conspicuous yellow disk. It is thus clear that double Dahlias, so far from being the result of European culture, were common in Mexico before the plant was introduced into Europe." I have read several histories of the Dahlia, but do not remember having noticed



FIG. 147.—*CAMPANULA ZOYSII*; FLOWERS LIGHT BLUE.

(See *Botanical Magazine*, p. 335.)

the above until quite recently. George M. Taylor, Mid-Lothian.

PROTECTION OF HORTICULTURAL NOVELTIES.—I endorse every word of the appeal for the protection of horticultural novelties by *Plant-Breeder*. As regards the justice of the proposal that ownership of a horticultural novelty should be legally vested in the raiser or his representative by patent or registration, there can be no question. Hybridisation and plant-breeding are such absorbing pursuits that, like the inventor, most of us can be counted on to continue the work even though we well know that others will reap the fruit of it. But it is not fair that advantage should be taken of that fact any more than in the case of the inventor. It is not to the public interest, for just as invention is stimulated by the Patent Laws, in so far as they are wise and just, so progress in the improvement of flowers and plants would be stimulated by the added incentive which the application of the same principles to plant-breeding would give. *Plant-Breeder* satisfactorily answers the anticipated ob-

jection that it would establish excessive prices for novelties. In fact, it is probable that it will have a quite opposite effect, as the following case shows. A few years ago the raiser of a new Daffodil sold the stock of five bulbs for £5. It was sold again the same day for £22 10s., and the following season was listed at £15 a bulb, and is still over £1. Yet the raiser would evidently have been ready to sell it for £1 a bulb from the start if his rights of ownership had been safeguarded by law. The methods suggested by *Plant-Breeder* to establish this ownership of a horticultural novelty appear both reasonable and practical. But who is to put the necessary Bill before Parliament? Though we may confidently expect that the R.H.S. will be in sympathy with our aims, can we expect it to initiate the necessary action? If so, it would be the most desirable course. But it is a good saying, "If you want a thing done, do it yourself," and I suggest the formation of a *Plant-Breeders' Association*, which could either take the neces-

sary steps to obtain the desired legislation or support the R.H.S. in doing so. Furthermore, besides the general protection of our interests, there are great possibilities of development for such an association, such as registration and co-ordination of our work. A. J. B.

BLACK STRIPE IN TOMATOS.—As a result of some investigations at the Experimental and Research Station, Cheshunt, Herts, it appears that what growers call "black stripe" may be due to a variety of causes under different conditions, in some cases pathological, due to fungi or bacteria, and in other cases physiological, probably due to unbalanced conditions of soil, and resulting in formation of cork only on the affected parts. In order to make a more detailed investigation, the director would be glad to receive specimens in as fresh a condition as possible from different districts, together with details of the occurrence of the disease, treatment given, etc. A. B. Lister, Director, Experimental and Research Station, Turner's Hill, Cheshunt, Herts.

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 20.—The usual fortnightly meeting was held on Tuesday last in the Vincent Square Hall, Westminster. The hall was well filled with exhibits, mainly of hardy border flowers.

Many novelties were submitted to the Floral Committee for award, and two First-class Certificates and nine Awards of Merit were recommended. The committee awarded twenty-two medals for collections, including the Gold Medal for Delphiniums and Paeonies shown by Messrs. KELWAY AND SON.

The Orchid Committee awarded a Cultural Commendation to Messrs. SANDER AND SONS for *Laelio-Cattleya Gotoiana* var. *Imperator*, and three medals for groups.

The Fruit and Vegetable Committee made no award.

At the three o'clock meeting in the Lecture

ary 10, 1914, p. 25, when the plant was illustrated in colours, the correct name is *T. lanceolata*, Miguel. The flowers are of fleshy texture, and produced on stiffly pendulous stalks. The petals are deep red (in *T. dependens* they are white), and as the flowers hang in rows along the branches, the tree is a most gorgeous sight when in flower. Shown by the DONARD NURSERY Co., Co. Down.

Rosa Moyesii.—This species received the Award of Merit on June 9, 1908, soon after the specimens introduced by Mr. E. H. Wilson from China flowered in Coombe Wood Nursery. It was first discovered in about 1890 by Mr. A. E. Pratt, and is named in honour of the Rev. J. Moyes, a missionary in China. The plant forms a shrub about 6-10 feet high, the erect stems being abundantly covered with stout prickles. The foliage is very like that of the Sweet Briar, but a little longer. The flowers are 2 inches across, and dark red, the younger flowers being cardinal red. Shown by Mr. J. ALLGROVE.

the central part having white processes with gold-coloured hairs and a violet-purple base. Shown by Messrs. BEES, LTD.

Sphaeralcea canescens.—A dwarf, shrubby plant with greyish stems and leaves, with coppery-orange coloured flowers. The leaves are about 1 inch in diameter; some are divided deeply into three segments, others are only deeply crenated. The flowers are about the size of the leaves, and are axillary along nearly the whole of the stems. Shown by SYDNEY MORRIS, Esq., Earlham Hall, Norwich.

Olearia semi-dentata.—The foliage of this exquisite species is ovate-lanceolate and densely tomentose beneath, the upper surface being sage-green. The stems and flower-stalks also carry a white tomentum. The flowers are axillary, and about 2 inches across. The younger blooms are of a soft mauve shade, the older flowers being much paler. Shown by the DONARD NURSERY Co., Co. Down.

Rose Mrs. A. W. Atkinson.—A strong-growing



FIG. 148.—OLEARIA SEMI-DENTATA GROWING WILD IN CHATHAM ISLAND, NEW ZEALAND.

(See Awards by the Floral Committee.)

Room, Prof. PERCIVAL gave an address on the subject "Colour of Flowers."

Floral Committee.

Present: Messrs. H. B. May (chairman), G. Reuther, S. Morris, R. W. Wallace, J. W. Bean, R. C. Notcutt, B. Crisp, J. Heal, J. F. McLeod, W. Howe, C. R. Fielder, J. Jennings, T. Stevenson, J. W. Blakey, A. Turner, C. Dixon, C. E. Pearson, H. Cowley, W. P. Thomson, E. H. Jenkins, E. Mawley, W. Cunthbertson, G. Paul, W. G. Baker, E. A. Bowles, W. B. Cranfield, and R. Hooper Pearson.

AWARDS.

FIRST-CLASS CERTIFICATES.

Tricuspidaria lanceolata.—This flowering shrub is a native of Chile, and has for long been grown in gardens in the milder parts of this country under the names of *Crinodendron Hookerianum* and *Tricuspidaria dependens*. However, as pointed out in *Gard. Chron.*, Janu-

AWARDS OF MERIT.

Iris Asia.—This is a bearded variety of exceptional stature, the stems as shown being more than 4 feet long. The size of the flower is in proportion, of a light purple colour, with brownish reticulations on a pale yellow ground, and a prominent gold-coloured crest. The standards are suffused with lilac, and are bronzy at the base. Shown by Mr. G. YELD, York.

I. germanica Richard II.—This variety is a seedling from Black Prince. The flowers have deep violet-coloured falls with reticulations leading to the gold-coloured crest; the standards are white with a trace of violet. Shown by Mr. AMOS PERRY.

Delphinium tanguticum.—A dwarf species from China with tuft of small, deeply-lobed leaves, not unlike those of *Ranunculus acris*, the largest being about 2 inches across. The flowers arise from a central stalk, which branches into two, each bearing a rich, purple-coloured flower,

the central part having white processes with gold-coloured hairs and a violet-purple base. Shown by Messrs. CHAPLIN BROS., Waltham Cross.

Rose Lucy Williams.—A hybrid of the *Wichuraiana* type raised from *Jersey Beauty* ♀ crossed with *Edward Mawley* ♂. The plant is a strong grower, has very glossy foliage, and reddish growth in the younger shoots. The flowers are rosy-carmine, very fragrant, and exceptionally large for its class. It is a climbing Rose of exceptional merit. Shown by Dr. A. K. WILLIAMS.

Deutzia crenata magnifica.—This is one of the most beautiful of the many varieties of *D. crenata*, which is a synonym of *D. scabra*, Thunberg. The plant forms a shrub 5-6 feet high, and has stiff, upright branches, crowded on the upper parts with racemes, some 6 inches long, of double white blossoms, each 1 inch across. Shown by Messrs. G. PAUL AND SONS.

Hybrid Primulas (*P. Boursiana* × *P. Bulleyana*).—Messrs. BEES, LTD., exhibited hybrids of this cross with flowers of a wide range of pretty colours—orange, rose, red, scarlet, purple, lavender, and other shades.

OTHER NOVELTIES.

Mr. H. J. ELWES, Colesborne, Andoversford, exhibited a number of rare and interesting plants, including a fine form of *Paeonia officinalis* from Smyrna; a species of *Bomarea* with the three outer segments of a soft pink colour, the inside ones greenish, mottled with brownish-red; *Urceocharis Clibranii*, a hybrid between *Urceolina pendula* and *Eucharis grandiflora*; see *Gard. Chron.*, Aug. 20, 1892, fig. 36; *Tropaeolum polyphyllum* raised from seed gathered by the exhibitor at Puente del Inca at 9,000 feet elevation; a *Myosotis* under the tentative name *macrantha*, with petals maroon coloured on the exterior and dull yellow inside; *Castilleja purpurescens* from Vancouver Island, with orange-red bracts and calyces; *Arisaema utile*, with a long tail to the hooded spathe, which is striped chocolate and green; *A. concinnum*, with narrower greenish-striped spathe; and *Cypripedium macranthum*, a Siberian species with rosy-purple flowers.

GENERAL EXHIBIT.

The following medals were awarded for collections:—

Gold Medal to Messrs. KELWAY AND SON, Langport, Somersetshire, for exhibits of Paeonies and Delphiniums. Both flowers were shown splendidly; the choicest Paeonies were King of England, ruby madder colour, with gold-coloured petaloid stamens striped with carmine; Queen Alexandra, white with yellowish centre; Lord Morley, Miss May Best (pink); Queen Victoria (pink); and Kelway's Lovely. Of the Delphiniums the varieties Dusky Monarch, Kelway's Masterpiece, and Langport Glory were especially fine.

Silver-gilt Banksian Medal to Messrs. J. PEED AND SON, West Norwood, for well-flowered Gloxinias and a good strain of Streptocarpus.

Silver Flora Medals to Messrs. R. H. BATH, LTD., Wisbech, for Paeonies, Delphiniums, and Irises, arranged on a low staging. This fine exhibit marked a pleasing departure from the usual style of displaying hardy flowers in masses on a crowded table; to Mr. AMOS PERRY, Enfield, for a large table of hardy border flowers, that made a gay bank of showy colouring; Mr. G. W. MILLER, Wisbech, for a large exhibit of border flowers, of which varieties of Delphiniums were a prominent feature. Paeonies, Oriental Poppies, Pinks, Irises, Pyrethrums, Campanulas, Verbasiums, Kniphofias, and many other subjects were also shown well in this comprehensive collection; Hon. VICARY GIBBS, Aldenham House, Elstree (grower, Mr. Ed. Beckett), for his superb strain of Streptocarpuses in pale mauve, violet, crimson, rose, magenta, purple, and other beautiful colours. The deeper guiding lines on the paler ground were exceedingly pretty; one of the most beautiful varieties was of pulplish-violet colour, with sulphur-yellow blotch at the entrance to the throat; Messrs. J. CHEAL AND SONS, LTD., Crawley, for hardy border flowers and Star Dahlias, flowering trees and shrubs; and Messrs. DOBBIE AND CO., Marks Tey, for varieties of Campanula medium in white, pink, lavender, and blue colours, arranged as a bank of flowers, with Cocos Palms and Kochia scoparia for greenery.

Silver Banksian Medals to Messrs. G. BUNYARD AND CO., LTD., Maidstone, for hardy flowers; Messrs. B. R. CANT AND SONS, Colchester, for Roses; Messrs. T. S. WARE, LTD., Feltham, for a semi-circular group of Paeonies with tall Verbasiums and Delphiniums at the back; Messrs. STUART LOW AND CO., Enfield, for Carnations; Messrs. H. B. MAY AND SONS, Edmonton, for standard Lantanas, Fuchsias, Pelargoniums, Heliotropes, and Abutilons, masses of Verbenas and Lobelias and Ferns; Messrs. B. LADHAMS, LTD., Shirley, Southampton, for hardy flowers; Messrs. W. PAUL AND SON, Waltham Cross, for long sprays of their fine Scarlet Climber Rose, from the open. The blooms were not so bright as those shown

previously from plants under glass. They also showed their small-flowered, perpetual-flowering variety, Cordelia, the blooms being copper-yellow fading to a paler shade with age; Mr. J. C. JENNER, Rayleigh, for perpetual-flowering Carnations; and Messrs. BEES, LTD., Liverpool, for their group of hybrid Primulas.

Bronze Flora Medals to Messrs. CARTER PAGE AND CO., London Wall, for Dahlias and Violas; Mr. J. C. ALLEGROVE, Langley, for a group of Rose Moyesii; Mr. G. REUTHE, Keston, for hardy flowers and Paeonies; and Messrs. B. LADHAMS, LTD.

Bronze Banksian Medal to Messrs. W. CUTBUSH AND SON, Highgate, for a group of their new Ivy-leaved Pelargonium Radiance.

Orchid Committee.

Present: Sir Harry J. Veitch (vice-chairman), Sir Jeremiah Colman, Bart., Messrs. Jas. O'Brien (hon. secretary), J. Wilson Potter, E. R. Ashton, Pantia Radli, Walter Cobb, J. Charlesworth, J. Cypher, W. H. Hatcher, C. H. Curtis, A. Dye, S. W. Flory, W. Bolton, C. J. Lucas, F. J. Hanbury and R. A. Rolfe.

Eight novelties were submitted to the committee for award, but none gained that distinction.

CULTURAL COMMENDATION

To Messrs. SANDER AND SONS, St. Albans, for a home-raised plant of *Laelio-Cattleya Gotoiana* Imperator, with five flowers on a spike. The species was originally imported as a natural hybrid between *Cattleya Warneri* and *Laelia tenebrosa*, but none of the imported forms equals the one now shown. The flowers are large, silver-white, tinged with lilac, with a broad rose-purple lip.

GROUPS.

Dr. MIGUEL LACROZE, Bryndir, Roehampton Lane (gr. Mr. Cresswell), showed *Laelio-Cattleya San Juan* (C. Mendelii × L.-C. Aphrodite), a pretty flower, with the general appearance of C. Mendelii, but with a broader lip; sepals and petals bluish white, lip purple in front, disc yellow. This exhibitor also showed *Laelio-Cattleya Teucra*, Bryndir variety (L.-C. Martinetii × C. Mossiae), with pale buff sepals and petals. The hybrid was raised by Messrs. Charlesworth and recorded under the name now given, but Continental records show that it flowered at Ferrières in 1911, and named L.-C. Rothschildiana.

ERNEST MOCATTA, Esq., Woburn Place, Addlestone (gr. Mr. Stevenson), showed *Laelio-Cattleya Aphrodite* Woburn Place variety, a fine flower, with pure white sepals and petals and rich violet-coloured lip. Mr. Mocatta also showed *Laelio-Cattleya brugensis* Woburn Place variety.

MESSRS. CHARLESWORTH AND CO., Haywards Heath, were awarded a Silver-Gilt Flora Medal for an effective group in which their forms of *Miltonia Charlesworthii* and *M. vexillaria* were the main features. There were also handsome hybrid *Odontoglossums* and *Odontiodas*.

MESSRS. SANDER AND SONS, St. Albans, were awarded a Silver Flora Medal for a group comprising excellent varieties of *Laelio-Cattleya Aphrodite* and other *Laelio-Cattleyas*, and a good selection of hybrid *Odontoglossums*, including the handsome O. Queen Alexandra.

MESSRS. FLORY AND BLACK, Slough, were awarded a Silver Banksian Medal for a group of hybrid Disas, principally D. Luna, with several specimens of D. Blackii (Luna × grandiflora), for the unspotted original form of which they secured an Award of Merit on May 18, 1915. The D. Blackii Langley variety now shown had large purplish rose-red flowers. The galea was white, evenly spotted with light purple, and the centre spotted with crimson. A very handsome and freely flowering hybrid.

MESSRS. HASSALL AND CO., Southgate, showed a good yellow *Laelio-Cattleya Cowanii*, with purple lip, and a form of *Laelio-Cattleya Canhamiana*.

MESSRS. J. AND A. McBEAN, Cooksbridge, sent *Cattleya Mabel* (Mrs. Myra Peeters × Warneri alba), a large, pure white flower of good shape.

Fruit and Vegetable Committee.

Present: Messrs. J. Cheal (vice-chairman), J. Harrison, W. Poupert, Owen Thomas, E. A.

Bunyard, P. D. Tuckett, A. Bullock, A. R. Allan, Ed. Beckett, W. Wilks, J. Jaques, and Geo. Kelf.

The only exhibit before this committee were two dishes of Cherries shown by Messrs. GEO. BUNYARD AND CO., LTD., Maidstone.

ROYAL INSTITUTION.

GROWING TIME AND SEED TIME.*

(Concluded from p. 328.)

WE select one of the simplest kinds of plants—a fungus the vegetative body of which consists of a mere network of tubular threads like the spawn of a Mushroom.

The fungus which we choose belongs to a genus the species of which occurs either parasitically on living tissues or saprophytically on dead tissues. One species attacks salmon and other fish, and causes their death; another infects the body of the house fly and kills it in the autumn. The species with which we are concerned is an aquatic, and lives on the dead bodies of flies. Having gained a lodgment in the body of a dead fly, this fungus, *Saprolegnia mixta*, sends its threads in all directions through the body. Presently they pass out into the water, and produce at their tips large numbers of minute motile cells, which escape in swarms and swim away to find new quarters. Finally sexual organs are produced by the mycelium. These are of two kinds, male cells and female cells. The contents of a motile male cell fuses with the female cell and a new generation is produced. Such is the life-history of *Saprolegnia mixta*. In Nature stage succeeds stage with a certainty and inevitability which suggest an inexorable fate. Yet the biologist is able to do what he likes with this fungus, to evoke or suppress any one of these stages at will.

If a piece of the mycelium be planted on a medium rich in nitrogen it may be kept for years—probably indefinitely—in the vegetative stage. To call forth the formation of swarm spores all that is necessary is to transfer the mycelium to pure water. Within a few days thousands of swarm spores are produced and swim away, and the exhausted mycelium dies. Or swarm spores may be produced in succession by growing the mycelium on solid white of egg in water. The filaments then grow out into the water, and finding but little nutriment, give rise to successive swarms of motile spores.

By cultivating this plant in a medium so composed that the supplies of food gradually fall off it enters into the reproductive stage; nay, more, if it be supplied with inorganic salts as well as a limited amount of special nitrogen-containing food, the fungus forms egg cells (female cells) and male cells; but if no inorganic salts are added only egg cells are produced, and then they develop parthenogenetically, that is, without fertilisation. Add a small quantity of inorganic salts, particularly phosphates, and male cells as well as female cells are produced, and fertilisation takes place in the normal manner.

In Nature the sequence of vegetative mycelium, zoospore formation, and sexual stage is maintained because of an inevitable sequence of environmental conditions. The mycelium on the poor solitary dead fly finds a rich diet. It grows apace. Having spread through the body and exhausted the stores of food contained therein, its branches push out into the water. There they find a greatly reduced diet. The fungus emigrates as zoospores—as bees swarm. When the food supply decreases more, and the game of individual life is up, the last energies of *Saprolegnia mixta* are devoted to sexual reproduction, whereby are produced eggs which when fertilised surround themselves with a thick wall and rest till the season of dead flies comes round again.

Thus in this plant the appearance of an inevitable sequence in the life-history is an illusion; for if *Saprolegnia* could find a world in which it could obtain exclusive possession of a dead fly of unlimited size it would live for ever in the mycelial or vegetative stage.

Wherefore we conclude that in this plant, at

* Second lecture on "Modern Horticulture," delivered by Dr. Keeble before the Royal Institution. (See *Gard. Chron.*, May 13, p. 260.)

all events, the periodic alternation of vegetative and reproductive phases is the direct consequence of the natural periodic alternation in one factor of its environment, namely, the nature and amount of its food supplies.

It is not to be inferred that the same simple solution will apply to all plants. That, for example, a diet poor in phosphates would result in the elimination of the male sex. Sundry attempts to determine sex by such means have been from time to time proclaimed. The most famous of recent times was that which prescribed a diet of sugar as a means of increasing the ratio of males to females: as well follow Dr. Johnson's prescription of "brandy for heroes." Nevertheless, the experiments with *Saprolignia* do justify the larger inference, that in one way or another, now simple, now subtle, sometimes evident, sometimes obscure, one or more factors of the environment, food, or light or temperature are responsible for calling forth the wonderful periodic rhythm of vegetative and reproductive growth. In confirmation of this generalisation brief reference may be made to the classical experiments carried out by Prof. Klebs with flowering plants. Most people are familiar with *Sempervivum*—plants commonly grown in gardens. These plants form rosettes of leaves close to the ground. They develop short runners in the spring, and presently a new rosette is produced at the apex of each runner, and, taking root, separates from the parent plant, so that a colony of *Sempervivum* is produced. When the plant is about to flower, which occurs after three or four years, the stem of the rosette elongates, flowers, and sets fruit. The plant dies. If, however, a rosette be grown for one year in rich soil, and then transferred to a small pot with poor soil, and kept fairly dry, it flowers inevitably in its third year. Conversely a plant about to flower may be compelled to abandon the attempt. If it be transferred a week or two before flowering to a warm frame and kept close and well watered, it remains continuously in the vegetative stage.

By other modes of treatment the elongating stem may be caused to bear, not flowers, but a rosette of leaves at its tip.

If rosettes ripe to flower are placed in a house glazed with blue glass—under which they are not able to manufacture much food—they elongate their stems as a preliminary to flowering, but produce no flowers. In red light, which permits of more assimilation than blue, but less than white light, a few flowers are formed, and a runner instead of remaining short continues to grow indefinitely, but fails to form a rosette at its tip. Brought into ordinary light the suppressed rosette-forming propensity now asserts itself, and rosettes are produced, not only at the apex, but all over the runner. Not only may runners be made to run on indefinitely, flowers be made to appear or to be suppressed, but the elongation of the stem which in Nature always precedes flower formation may be checked and flowers caused to form at the tip of the rosette.

What is true of *Sempervivum* is true of other plants. An inflorescence (*Lysimachia ciliata*) may be made, by treating it as a cutting and growing it in moist earth in bright light, to pass back into the vegetative stage. A flowering shoot of Ground Ivy brought into and grown in a greenhouse ceases to continue to grow vertically upwards, and gives rise at its tip to a horizontally-growing runner. An inflorescence of *Ajuga reptans* treated as a cutting, its cut end placed in a nutritive solution of inorganic salts and grown in a north light in a greenhouse, abandons its attempt to flower, and produces a rosette at its apex.

Wherefore we conclude that the periodic alternation of vegetable growth and flower-formation is to be ascribed, not to an internal rhythm, but to the influence of environment. In Nature these environmental agents are manifold.

The chief are food and moisture, light and air, and warmth. Though these several influences vary in intensity from year to year, yet in the main and collectively they are fairly uniform, and thus it is that year in, year out, our plants pursue, with rare exceptions, the even tenor of their way. They follow a course of development so consistent as to give the impression of inevitableness.

Obituary.

JONATHAN NASH.—We learn from the American press of the death, in New York, of Mr. Jonathan Nash, a member of the firm of Moore, Hentz, and Nash, in that city. Mr. Nash was born in Essex in 1853; he emigrated to America at the age of forty, and after a year at Madison, N.J., entered the firm with which he was associated until his death. He was a man of great business ability, combined with strict integrity.

L. PICHENAUD.—We regret to learn, from our contemporary, the *Revue Horticole*, of the death, at the early age of thirty-one, of Monsieur L. Pichenaud, head of the National School of Horticulture at Grignon. Monsieur Pichenaud had risen with great rapidity to the important position he held, and his practical knowledge and scientific research gave promise of a brilliant career. He was one of the most valued collaborators of Edouard Grignon, and it was largely due to the technical skill of Pichenaud that Grignon was able to pursue his researches into variations under grafting. Pichenaud himself wrote several horticultural articles, including an excellent treatise.

LAW NOTES.

THE HIGH PRICE OF LABOUR.

At the offices of the Official Receiver for the Kingston district, York Road, Lambeth, S.E., recently, the first meeting of creditors was held under the failure of Emily Pike, florist and nurseryman, Belvidere Nursery, Hanworth. The statement of affairs filed by the debtor disclosed gross liabilities amounting to £2,217 17s. 11d., of which £1,150 2s. 9d. was due to unsecured creditors. The assets were estimated to produce £121 18s., from which £58 1s. had to be deducted for the claims of preferential creditors payable in full.

The debtor alleged her failure to have been caused through decline of business owing to the war and the difficulty of obtaining, and the high price of, labour.

The Official Receiver's report upon the case was to the following effect:—The debtor, aged 46, who was adjudged bankrupt on May 25, 1916, states that on December 20, 1895, her husband, James Pike, was granted a lease from March 25, 1896, for twenty-eight years at £97 10s. a year, of the "Belvidere" Nursery, comprising five acres of land, four cottages, and a dwelling-house, situate at Hanworth. He carried on the business there until April 13, 1903, when he died, and it was then carried on by the executors of his will (of whom she was one) until January 1, 1908, since which time she has traded there solely for her own benefit. Her husband's estate was sworn at the gross value of £2,170 7s., but his liabilities were in excess of that amount. On January 1, 1908, £949 9s. 2d. was due to her two co-executors for moneys advanced and goods supplied to her husband. They joined in an assignment to her of the lease, and on January 22, 1916, she executed a mortgage in their favour of the lease and greenhouses to secure the repayment to them of that amount.

The business has declined since the outbreak of the war. A creditor obtained judgment against her for £75 early in February, 1916, and on May 22, 1916, a distress for rent, £134 5s., was levied, but withdrawn the same day. To stay further proceedings she filed her petition.

The unsecured liabilities, £1,150 2s. 9d., are stated to be due as to £693 15s. to creditors for cash, and as to £456 7s. 9d. to trade creditors.

The estate was left in the hands of the Official Receiver.

A POINT IN EJECTMENT LAW.

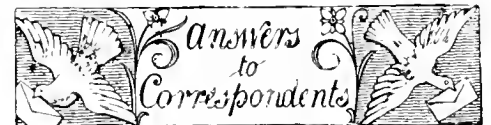
At Cheshunt Petty Sessions, on Wednesday, Mr. Bernard Campion, barrister, appeared on behalf of Messrs. Rochford and Co., nurserymen, for an ejectment order against Edward Parker, Turnford Villas, Broxbourne. The case had been adjourned from May 17, when the company were not then legally represented. The clerk (Mr. Jessop) stated that the point at issue was that the cottages were owned by Mrs. Rochford, and not by the company, who wanted the cottage in

question for the accommodation of a nursery foreman.

Mr. Campion stated that under a recent Act of Parliament, passed with the expressed object of meeting war conditions, nobody was enabled to obtain an ejectment order except within certain conditions with the permission of the Court. Under the War Restrictions Act, one of those conditions was "where the premises were reasonably required by the landlord for some other person in his employment or on some other grounds." He held that the cottage was reasonably required for some other person in the employ of the company. These cottages were workmen's dwellings, erected by the late Mr. Thos. Rochford exclusively for employees of the firm.

The clerk stated that the point at issue was that Mr. Parker was not employed by Mrs. Rochford, but by the company, whereas the houses were owned by Mrs. Rochford and not by the company. Although Mrs. Rochford was a large shareholder in the company, that did not make her the company itself. Mr. Campion said Mrs. Rochford held a very large share in the company. Mr. F. E. Martin, secretary to the company, said the company had the selection of the tenants for the houses. Parker used to work for the company, and occupied a house, for which he paid 6s. 6d. a week. Parker left the company in January to work on munitions.

The Bench made an order to take effect in twenty-one days.



BOOK: J. W. Fruit Bottling, by G. W. S. Brewer, published by Messrs. Harvey and Healing, Cheltenham.

BOTTLING GREEN PEAS: J. Lindley. Place the Peas in dry, wide-mouthed bottles, shaking them down until they are quite tightly packed. Wind some hay round the lower part of each bottle, and place them all upright in a large saucepan with cold water enough to reach to the necks. Bring the water to the boil, and keep it boiling for two hours. Cork the bottles as soon as possible, and leave them in the water until it is cold. Then remove them, cover the corks with sealing wax to exclude all air, and store the bottles in a cool, dry place—a good plan is to bury them completely in a dry part of the garden. If all air is excluded, the Peas will keep for about five months.

MELONS DISEASED: S. G. Your Melons are attacked by the fungus disease known as Melon Leaf-spot (*Cercospora melonis*). Pick off and burn every diseased leaf, and destroy the whole plant if the whole is affected, spraying the rest with half-strength Bordeaux mixture if no fruit is present. If, however, the fruit has formed, use liver of sulphur.

NAMES OF PLANTS: G. O. Johnson. 1. *Saxifraga cordifolia*; 2. *S. Hostii*; 3. *S. cochlearis*; 4. *S. Andrewsii*; 5. *S. Lindsayi*.—*Harry White*. *Centaurea gymnocarpa*, *C. candidissima*, or, more correctly, *C. ragusina*, has a much less divided leaf with broad lobes.—H. A. 1. *Veronica officinalis*; 2. *Ajuga reptans* or Bugle; 3. *Leucobryum glaucum*, (Glaucous Fork-moss. — *Handsome Shrub*. Weigela "Groenewegenii."—J. Lindley. 1. Hybrid *Rhododendron* (unnamed); 2. *Cymbidium aloifolium*; 3. *Helianthemum vulgare* var.; 4. *Heuchera sanguinea* var. 1. *Mertensia virginica*; 2. *Cestrum* (*Habrothamnus*) *fasciculatum* (see fig. 149). This fine Mexican climber is an old plant in cultivation; it was grown extensively by the older generation of gardeners, under its synonym *Habrothamnus*. The plant has almost globular clusters of orange-scarlet flowers, and is one of the most attractive of shrubby greenhouse climbers. The bunches of purple berries are almost as effective as the flowers.

ONIONS EATEN BY GRUBS: W. and S. The larvae are those of the Onion Fly, *Anthomyia ceparum*. The female fly lays its eggs on the leaves of the Onion plant, and the resulting

grubs work their way down between the leaves to the bottom of the bulb. They leave the bulb before entering the pupal stage, and enter the soil, but the whole life-cycle is very short, the perfect flies being usually on the wing in about three weeks after the formation of the chrysalis. The pupae formed in the late autumn, however, remain in the soil in chrysalis form until the early spring. One of the best methods of prevention is to ensure that the plants grow continuously and quickly

soap-suds. In the case of a bad attack, petroleum emulsion can be used, but the proportion of petroleum should not exceed one gill to each gallon of water, and it will be well to try it first on one or two plants, in case it injures the foliage. Onions should not be sown again on soil which has been infected for at least two years; but if this course is not possible, it may be noted that if trenching is properly carried out, the pupae which are wintering in the soil will become so deeply

the trees twice a week with liver of sulphur in the proportion of one ounce in four gallons of water. Do not use Bordeaux mixture, as it is injurious to the leaves of Peaches.

VINE LEAVES DISCOLOURED: *Milton*. The leaves are discoloured, as you suspect, by excess of sunlight. Attention to shading will prevent a repetition of the trouble. Although red spider is not responsible for this damage, you should take measures to get rid of the pest, such as

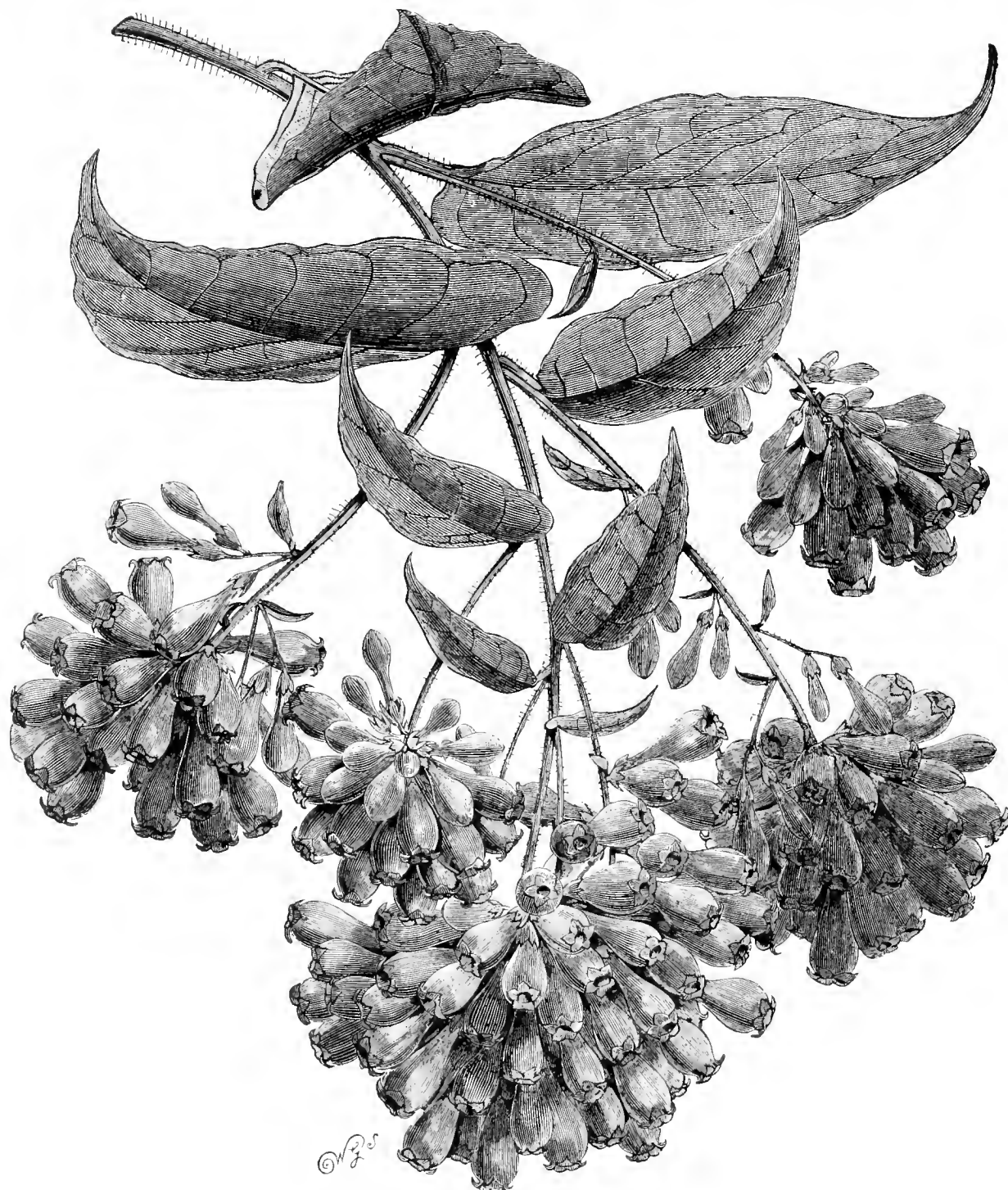


FIG. 149.—CESTRUM (HABROTHAMNYS) FASCICULATUM: FLOWERS ORANGE-SCARLET.

from the beginning, without check; this can be accomplished by sowing on perfectly worked land which has been suitably manured, by sufficient watering in dry weather, and by supplying liquid manure or other stimulant whenever required. Watch carefully the young plants, and if any show signs of turning yellow (which is good evidence of infestation), pull them up with the bulb, and immediately burn them, syringing all the rest of the plants and the surrounding soil repeatedly with strong

buried that the flies, being unable to emerge in the following spring, will perish. The practice is becoming general of sowing Onion seeds in boxes under glass in February, and planting out the seedlings in the open in April. This method ensures quick and even growth, and it has been found that Onions so raised are not, as a rule, attacked by the fly.

PEACH LEAVES DISEASED: *S. G.* and *Milton*. The disease affecting your Peaches is Shot-hole Fungus, or *Cercospora circumscissa*. Spray

giving plenty of ventilation, atmospheric moisture, frequent syringings with clear water directed to the under-side of the leaves, and, if necessary, flowers of sulphur applied to the foliage.

Communications Received.—W. A. T.—G. T. D. de V.—A. B.—H. W. T.—E. W.—H. S.—R. Smith—F. Spencer—S. Low and Co.—C. Davis—J. F.—W. C.—F. G. L. M.—C. H. P.—J. A. A.—M. M.—F. C.—R. G. W.—H. S. T.—A. J. B.—W. S. B.—L. D. and Bros.—J. J. and Sons—H. R. D.—R. L. C.—P. C. (Thanks for plan, etc.)—Sir H. L.

MARKETS.

COVENT GARDEN, JUNE 21.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Wednesday, by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market, and the demand, and they may fluctuate not only from day to day, but occasionally several times in one day.—EDS.

Cut Flowers, &c.: Average Wholesale Prices.

Antirrhinum, pink, per doz. bun.	s.d. s.d. 4 0-5 0	Marguerites, yellow, per doz. bunches . . .	s.d. s.d. 2 0-2 6
Carnations, per doz. blooms, best American varieties . . .	1 6-2 6	Nigella (Love-in-a-Mist), per doz. bunches . . .	4 0-5 0
— smaller, per doz. bunches . . .	— —	— Cattleya . . .	8 0-9 0
— Carola (crimson), ex. large . . .	2 6-3 0	— Cyripedium . . .	— —
— Malmaison, per dozen blooms . . .	— —	— Odontoglossum crispum . . .	1 6-2 0
— pink . . .	4 0-6 0	Pelargonium, per doz. bunches, double scarlet . . .	6 0-8 0
Cornflower, blue, per doz. bun. . .	1 3-1 6	Pinks, white (Mrs. Sinkins), per doz. bun. . .	2 0-3 0
Daisies, large white, per doz. bun. . .	1 6-2 0	Poppies, Iceland Richardias (Arums), per doz. . .	2 0-2 6
Delphinium, blue, per doz. bun. . .	8 0-9 0	Roses, per dozen blooms—	— —
Eucharis, per doz. . .	— —	— Frau Karl Druschki . . .	1 3-2 0
Forget-me-not, per doz. bun. . .	3 0-3 6	— General Jacqueminot . . .	0 9-1 0
Gardenias, per box of 12 and 18 blooms . . .	2 0-3 0	— Lady Hillingdon . . .	1 0-1 6
Gladioli, Akermann, per doz. bun. . .	12 0-15 0	— Liberty . . .	1 6-3 0
— Blushing Bride, per doz. bun. . .	8 0-10 0	— Madame A. Chateaux . . .	1 6-2 0
— Ne Plus Ultra, per doz. spikes . . .	1 6-2 0	— Melody . . .	1 6-2 0
— Peach Blossom, per doz. bun. . .	6 0-8 0	— Mrs. J. Laing . . .	1 3-2 0
— The Bride, per doz. bun. . .	8 0-10 0	— Mrs. Russell . . .	2 6-3 0
Gypsophila, English, white, per doz. bun. . .	8 0-10 0	— My Maryland . . .	1 6-2 0
— pink . . .	— —	— Niphetos . . .	1 6-2 0
Iris, Spanish, per doz. bunches . . .	— —	— Ophelia . . .	1 0-2 0
— white . . .	6 0-9 0	— Prince de Bulgarie . . .	1 6-2 0
— blue . . .	6 0-9 0	— Richmond . . .	1 6-2 6
— mauve . . .	6 0-8 0	— Sunburst . . .	1 6-2 6
— yellow . . .	6 0-9 0	— White Crawford . . .	1 6-2 6
Lapageria, per doz. blooms . . .	2 0-2 6	Scabiosa caucasica, per doz. bun. . .	4 0-5 0
Lilium candidum, long . . .	— —	Spiraea, white, per doz. bun. . .	— —
— short . . .	1 0-1 3	Statice, mauve, per doz. bun. . .	4 0-5 0
— longiflorum, per doz. long . . .	1 6 —	Stephanotis, 72 pips . . .	1 9-2 0
— short . . .	1 3-1 6	Stock, double white, per doz. bunches . . .	5 0-6 0
— lancifolium album, long . . .	— —	Sweet Peas, English, white, and coloured, per doz. bun. . .	3 0-8 0
— short . . .	2 6-3 0	Tuberose, per packet, 24 blooms . . .	0 9 —
— lancifolium rubrum, per doz. long . . .	2 0 —	Viola cornuta, per doz. bun. . .	1 0-1 3
— short . . .	1 0-1 6	White Heather, per doz. bun. . .	— —
Lily-of-the-Valley, per dozen bunches . . .	— —		
— extra special 24 0 . . .	— —		
— special . . .	15 0-18 0		
— ordinary . . .	— —		

Cut Foliage, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Adiantum (Maidenhair Fern), best, per doz. bunches . . .	5 0-6 0		Eulalia japonica, per bunch . . .	—	
Agrostis (Fairy Grass), per doz. bunches . . .	2 0-4 0		Fern, French, per doz. bunches . . .	0 6-0 8	
Asparagus plumosus, long trails, per half dozen . . .	1 6-2 0		— common . . .	4 0-5 0	
— medium, doz. bunches . . .	12 0-18 0		Galax leaves, green, per doz. bunches . . .	—	
— Sprengerii . . .	8 0-12 0		Hardy foliage, various, per doz. bunches . . .	4 0-8 0	
Carnation foliage, doz. bunches . . .	4 0-5 0		Moss, gross, bunches . . .	5 0-6 0	
Croton foliage, doz. bunches . . .	12 0-15 0		Myrtle, doz. bun. . .	6 0-—	
Cycas leaves, per doz. . .	5 0-12 0		— English, small-leaved . . .	6 0-—	
			— French, per doz. bunches . . .	1 0-1 3	
			Smilax, per bun. of 6 trails . . .	1 6-2 0	

REMARKS.—There is still a good demand for best white flowers. Pyrethrums are practically over for this season. Double white Narcissus is still being received in excellent condition, and all consignments are soon cleared at high prices. Double white Stock is fetching exceptionally good prices for June, and supplies are not nearly equal to the demand. Good Roses, especially red ones, are still very scarce. There is a moderate supply of medium quality blooms of Mme. A. Chateau, My Maryland, Mrs. Russell, Mrs. J. Laing, Melody, Sun-

burst, white Molly Shattman Crawford, Frau Karl Druschki, White Brals and Lady Love. Carnations are more plentiful, and prices are getting lower. Lily-of-the-Valley has been unobtainable during the past few days. Lilium longiflorum is of much better quality than hitherto; L. lancifolium rubrum is scarce, and only short blooms of L. l. album are offered. Tuberose are beginning to arrive. There is only a limited supply of Stephanotis and Lapageria, but good blooms of Gardenia are on sale. Gypsophila is more plentiful again. Scabiosa, Cornflower, Delphinium, Poppies, Paeonies and Gladioli are selling freely, and a few bunches of Mauve Statice are to be had, which are soon cleared.

Plants in Pots, &c.: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Aralia Sieboldii, dozen . . .	4 0-6 0		Grevillea, 48's, per doz. . .	—	
Araucaria excelsa, per doz. . .	18 0-21 0		Heliotropes, per doz. 48's . . .	7 0-8 0	
Asparagus plumosus nanus, per doz. . .	10 0-12 0		Hydrangeas, white, per doz. . .	10 0-12 0	
— Sprengerii . . .	6 0-8 0		— pink, per doz. . .	9 0-10 0	
Aspidistra, per doz. green . . .	21 0-30 0		— blue, per doz. . .	10 0-12 0	
— variegated . . .	30 0-60 0		— large plants, each . . .	5 0-10 0	
Cacti, various, per tray of 15's . . .	4 0-—		Kentia Belmoreana, per doz. . .	4 0-8 0	
— tray of 12's . . .	5 0-—		— Forsteriana, 60's, per doz. . .	4 0-8 0	
Cocos Weddelliana, 48's, per doz. . .	18 0-30 0		— larger, per doz. . .	18 0-36 0	
— 60's, per doz. . .	8 0-10 0		Latania borbonica, per doz. . .	12 0-30 0	
Crassulas, per doz. 48's . . .	12 0-15 0		Lilium longiflorum, per doz. . .	18 0-—	
Croton, per doz. 18 0-30 6			Marguerites, in 48's, per doz. . .	6 0-8 0	
Dracaena, green, per doz. . .	—		— white . . .	6 0-8 0	
Erica, white, 48's, per doz. . .	18 0-21 0		Pandanus Veitchii, per doz. . .	36 0-48 0	
— ovata, 48's, per doz. . .	12 0-15 0		Pelargoniums, per doz. 48's . . .	18 0-12 0	
Ferns in thumbs, per 100 . . .	8 0-12 0		Phoenix rupicola, each . . .	12 6-21 0	
— per 100, in small and large 60's . . .	12 0-20 0		Rhodanthus, per doz. . .	6 0-7 0	
— in 48's, per doz. . .	5 0-6 0		Roses, Ramblers, each . . .	3 6-10 6	
— in 32's, per doz. . .	10 0-18 0		— Polyanthus, per doz. 48's . . .	12 0-18 0	
— choicer sorts, per doz. . .	8 0-12 0		Spiraea, white, per doz. . .	8 0-10 0	
Ficus repens, 48's, per doz. . .	4 6-5 0		— pink, per doz. . .	8 0-10 0	
— 60's, per doz. . .	3 0-3 6		Stocks, white and coloured, per doz. 48's . . .	9 0-10 0	
Fuchsias, per doz. 48's . . .	8 0-9 0		Verbena, Miss Willmott (pink), per doz. 48's . . .	8 0-9	
Geonoma gracilis, 60's, per doz. . .	6 0-8 0				
— larger, each . . .	2 6-7 6				

Vegetables: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Artichokes, Globe, per doz. . .	3 6-4 0		Lettuce, Cabbage s.d. s.d.		
— Jerusalem, per lb. . .	2 6-—		and Cos, per doz. . .	0 4-1 0	
Asparagus, English . . .	1 3-3 0		Mushrooms, per lb. . .	1 0-1 3	
Aubergines, per doz. . .	3 0-4 0		— Buttons . . .	1 0-1 3	
Beetroot, per bag . . .	5 0-—		Mustard and Cress, per doz. punnets . . .	1 0-—	
Beans, Broad, Eng. per bus. . .	4 0-—		Onions, per bag 12 0-—		
Cabbages, per tally . . .	4 6-8 0		— spring, per doz. bun. . .	6 0-12 0	
Carrots, new, per doz. bun. . .	5 0-10 6		Peas (English), per lb. . .	0 3-0 4	
Cauliflowers, per doz. . .	6 0-8 0		— per bus. . .	4 0-5 0	
Cucumbers, per flat . . .	10 0-12 0		Potatoes—		
Endive, per doz. . .	1 0-—		— Channel Islands, per lb. . .	0 2-0 3	
English Beans, per lb. . .	0 10-1 2		Radishes, per doz. bun. . .	0 6-1 6	
French Beans, (Guernsey), per lb. . .	0 10-1 2		Rhubarb, natural, per doz. . .	4 0-6 0	
Greens, per bus. . .	1 0-—		Spinach, per bus. . .	4 6-—	
Garlic, per lb. . .	0 10-1 0		Tomatoes, Eng. per lb. . .	4 0-7 0	
Herbs, per doz. bun. . .	2 0-6 0		— Teneriffe, per bundle . . .	19 0-20 0	
Horseradish, per bundle . . .	6 0-—		Turnips, new, per doz. bun. . .	6 0-—	
Leeks, per doz. . .	3 0-—		Vegetable Marrows, per doz. . .	6 0-10 0	
			Watercress, per doz. . .	0 4-0 8	

Fruit: Average Wholesale Prices.

	s.d.	s.d.		s.d.	s.d.
Apples—			Gooseberries, green, per 1 bus. . .	4 0-4 6	
— Tasmanian & Australian, per case . . .	10 0-12 0		Grape Fruit, per case . . .	35 0-—	
Apricots, per box . . .	1 3-4 6		Grapes: English, New Ham-burgh, per lb. . .	1 6-3 0	
Bananas, bunch—			— Black Alicante, per lb. . .	2 0-—	
— Medium . . .	7 0-9 0		— Gros, Colman, per lb. . .	2 6-—	
— X-medium . . .	8 6-10 0		— Canon Hall, per lb. . .	5 0-6 0	
— Extra . . .	9 6-13 0		— Muscats, Eng. lish, per lb. . .	2 6-5 0	
— Double X . . .	10 6-15 0		Lemons, per case . . .	10 0-18 6	
— Giant . . .	16 0-18 0		Lyches, per box . . .	1 4-1 6	
— Red, per ton £20 0 . . .			Melons, Cante-loup, each . . .	5 0-10 0	
Jamaica, per ton £16-£17 . . .			— Guernsey and English, each doz. . .	2 0-3 0	
Cherries, Contin-ental, per box . . .	1 0-3 0		Nectarines, per doz. . .	3 0-10 0	
— Strikes . . .	7 0-9 0				
— per halves . . .	11 0-14 0				
Currants, Black, imported, per 1 bus. . .	9 6-10 6				
— Red, French handles . . .	3 0-4 6				
Figs, Green, per doz. . .	2 6-8 0				

Fruit: Average Wholesale Prices continued.

	s.d.	s.d.		s.d.	s.d.
Nuts, Brazils, new, per cwt. 60 0-64 0			Raspberries, per lb. . .	1 6-2 0	
— Coconuts, per 100 . . .	22 0-24 0		Strawberries, Southampton, per basket . . .	1 6-2 6	
Oranges, per case 23 0-34 0			Walnuts, Naples, per cwt. . .	75 0-—	
Peaches, English, per doz. . .	3 0-10 0				

REMARKS.—The market is still well supplied with Tasmanian Apples, the varieties being mainly Sturmer Pippin and French Crab. The season of Southampton Strawberries is now at its height, and gathering has also begun in Kent and Middlesex. Peaches and Nectarines are more plentiful. Kent Cherries and French Black and Red Currants are beginning to arrive. Supplies of Gooseberries and English Black Grapes are increasing daily. There is a fairly good supply of Grapes Muscat of Alexandria and Canon Hall. Melons and green Figs are plentiful, and supplies of English Tomatoes have increased during the week. Mushrooms, Cucumbers, and Vegetable Marrows continue to arrive in fair quantities. There is a little good Asparagus still to be had, but Cauliflowers are scarce and expensive. Peas and Broad Beans are increasing in supply, and French Beans are fairly plentiful. E. H. R., Covent Garden Market, June 21, 1916.

Potatoes.

	s.d.	s.d.		s.d.	s.d.
Old:—			New—continued.		
Dunbar . . .	17 0-18 0		Teneriffe, per case . . .	12 0-14 6	
Lincoln . . .	13 0-15 0		Spanish, per cwt. . .	20 0-—	
Scotch . . .	13 6-15 0		— Red, per case . . .	15 6-16 0	
New:—					
Jersey, per cwt. 23 0-24 0					

REMARKS. The trade in old Potatoes is nearly finished. They are still very dear, and so are new tubers. J. Venhorn, Covent Garden and St. Pancras, June 21, 1916.

TRADE NOTE.

G. & W. YATES, LTD.

THE above-named company has been registered with a capital of £5,000 in £1 shares, of which £4,000 are 6 per cent. preference shares and £1,000 ordinary. The company was formed for the purpose of taking over the business of seed growers, bulb importers, and florists carried on as G. and W. Yates, at 28, Market Place, Manchester. The company is registered as a private company.

THE WEATHER.

WEATHER IN WEST HERTS.

Week ending June 21.
A dry and very cold week.—This was a very cold week for the time of year, both during the daytime and at night. On the warmest day the temperature in the thermometer-screen at no time exceeded 66°, and on the coldest night the exposed thermometer registered 22° of frost. Since the present month began there has not been a single unseasonably warm day and but two unseasonably warm nights. The ground is at the present time 4° colder at 1 foot deep and 3° colder at 2 feet deep than is reasonable. No rain at all fell during the week. A quarter of a gallon of rainwater came through the bare soil percolation-gauge, but no measurable quantity through that on which short grass is growing. The sun shone, on an average, for 6½ hours a day, which is the average daily duration for the month. Light airs and calms alone prevailed. The mean amount of moisture in the air at 3 o'clock in the afternoon fell short of a seasonable quantity for that hour by 1 per cent. E. M.

CATALOGUES RECEIVED.

Australia.

F. H. BRUNNING, LTD., 64, Elizabeth Street, Melbourne.—Seeds, plants, sundries.

*• NEW POSTAL RATES.—Contributors and correspondents are reminded that under the new postal rates, which came into operation on November 1 last, letters bearing a penny stamp must not weigh more than one ounce. The postal charge for letters exceeding one ounce, but not exceeding two ounces, is twopence, and thereafter at the rate of 2d. every two ounces.

SITUATIONS VACANT.

Four Lines 3s. (Head-line counted as Two),
6d. for each succeeding line.

Gardeners writing to Advertisers of Vacant Situations are recommended to send them copies of testimonials only, retaining the originals. On no account should they enter into communication with unknown correspondents who require a fee beforehand.

PRIVATE.

WANTED (near Hindhead), experienced **HEAD GARDENER**, cottage and garden provided.—Reply, with particulars, age, experience, family, and wages required. T. M. K., 24, Bryanston Square, London.

WANTED, **HEAD GARDENER** (ineligible) to take Charge of Garden where 5 are employed at present, for duration of the war; good modern Glass and compact Garden; must be good grower of Grapes and Carnations; married man and his wife or single man could lodge in present garden's cottage, a man over military age or good foreman seeking first head place would be considered.—T. DOWN, Rising Park Gardens, Alton, Hants.

WANTED, **HEAD GARDENER** (over military age), for Orchids specially; good cottage and wages.—Write, A. M., c/o Willings, 33, Knightsbridge, S.W.

SUPERINTENDENT OF BURIAL GROUND.
CHESHUNT BURIAL BOARD require the services of a suitable Man (must be non-eligible for military service), as **WORKING SUPERINTENDENT** at Cheshunt Burial Ground; previous experience essential.

Applications, stating age, qualification, and wages required, must be delivered to me forthwith.
CHARLES W. COOK, Clerk to the Board.
Office: Manor House, Cheshunt, Herts. June 20, 1916.

WANTED, **HEAD WORKING GARDENER** for large college grounds for duration of war only; must be ineligible for Army. Wages, 29s.—Apply, DEAN, Christ's College, Cambridge.

WANTED, **HEAD WORKING GARDENER** for duration of war, or **LADY GARDENER**; ineligible for war; good experience, Inside and Out; wages 26s. and cottage; knowledge of electric light.—Apply, with all particulars, to MRS. ROBINSON, Redlynch House, Salisbury.

WANTED, **HEAD WORKING GARDENER** (ineligible), two under, Vines, Peaches, Herbaceous; excellent rooms provided; in Bucks; state experience and wages required.—I. J., Box 5, 41, Wellington Street, Strand.

WANTED, permanent **HEAD WORKING GARDENER**, ineligible; 2 men and boy kept; some Glass; 25s. and cottage; bonus during war. S. GEORGE LITTLEDALE, Wickhill House, Bracknell, Berks.

WANTED, **HEAD WORKING GARDENER** of two; knowledge of Electric Plant essential; good cottage; wages 28s., coal, light, fruit, and vegetables.—Apply, MRS. FABER, Manor House, Ewell, Surrey.

WANTED, **HEAD WORKING GARDENER**; must be ineligible or above military age; South Coast; Flower Gardens, with Hothouses and Lawns. Write, stating full particulars, to A. H. BURTON, 18, Manson Place, Queen's Gate, London, S.W., or apply personally, Monday or Tuesday, June 26 or 27, between 2.30 and 3.30 p.m., or by appointment.

WANTED, **GARDENER** (**HEAD WORKING**), with four under; very little Glass; cottage provided; state experience, age, wages required; must be a capable manager.—Apply, J. O. FISON, Sutton Hall, near Ipswich.

WANTED, **HEAD WORKING GARDENER**, Viney, 3 Greenhouses, Kitchen and Pleasure Garden; 2 Meadows.—MRS. TYNDALE, Meadowcroft, Chislehurst.

WANTED, **GARDENER**, for 2½ acres; in Sole Charge; fully competent to take charge of oil engine, electric plant with accumulators, and sewage with septic tank, and good knowledge small Chicken Farm with incubator and foster mother.—Apply, Headlands, Berkhamsted, giving experience and salary required.

WANTED, immediately, experienced **MAN** to take entire Charge of Glass Department, for duration of war; comfortable Bothy and liberal wages given; South of Scotland.—THOMAS METHVEN AND SONS, Seedsmen, Edinburgh.

WANTED, a **MAN** to take charge of Houses; 26s. and Bothy; also one for Pleasure Grounds; good wages; state requirements, with Bothy; duty every fourth week.—GEO. FIGGIS, Warren House Gardens, Kingston Hill, Surrey.

WANTED, **SINGLE-HANDED**, with help; Fruit, Flowers, Vegetables, and Orchids; good wages, cottage and light.—HILL, The Garth, Liscane, Glam.

WANTED, **SINGLE-HANDED GARDENER**, all-round experience, Inside and Out; above military age.—Apply, stating wages and particulars, MRS. MORTIMER, Poundfields, Old Woking, Surrey.

WANTED, experienced **GARDENER**; ineligible; Single-handed; no Glass; give references; state wages.—Box No. 75, MILLS AND CO., Advertising Contractors, Coventry.

WANTED, **GARDENER** (**SINGLE-HANDED**); boy help provided; 24s. and house.—Apply, WM. WOOD, SON AND GARDNER, Land Agents, Crawley, Sussex.

WANTED, **SINGLE-HANDED GARDENER**, married, without family; ineligible.—Apply, S. Buckhurst Park, Ascot, Berks.

WANTED, experienced, **SINGLE-HANDED GARDENER**, Flowers and Kitchen Garden; take entire charge; small garden; good cottage.—Apply, MRS. PIZEY, Casamia, Forest View, Chingford.

WANTED, **GARDENER** (**SINGLE-HANDED**); ineligible; for Flower and Kitchen Garden.—State age, experience, wages required, when disengaged, and send copy of reference to R., Box 18, 41, Wellington Street, Covent Garden, W.C.

WANTED, **GARDENER** (**SINGLE-HANDED**); ineligible; unmarried; for period of war; Hardy Plants specially; one Greenhouse; very small Kitchen Garden; about half-hour's work on Sunday; lodgings found.—C. PRENTIS, "Posiers," Borden, Sittingbourne.

WANTED, a **SINGLE-HANDED GARDENER** (with help) for a place near Windsor; ineligible for the Army; must be able to grow Perpetual Carnations; wages to commence, 25s., with cottage.—Apply, with full particulars, to W. L. BASTIN, Buscot Gardens, Faringdon, Berks.

WANTED, **SECOND GARDENER** or **FOREMAN**, capable of taking charge while Head Gardener is absent (3 men kept); good character essential; must be over age or ineligible; Kitchen Garden, Roses, Herbaceous Borders; very little Glass; permanent situation; good cottage and wages; no objection to children.—Write full particulars to MISS THYNNE, Westlands, West Grinstead, Horsham.

WANTED, **GARDENER** (good **SECOND**); permanently; ineligible for Army, and have a good knowledge of his work; able to take charge for the duration of the war; at present four others kept.—State full particulars and wages required, THOS. COX, Manor House Gardens, Basingstoke.

WANTED, **SECOND GARDENER** of good experience; man or woman; state wages required.—Apply, W. McCALL, Woodlands, Walthamstow.

WANTED, **SECOND GARDENER** (ineligible); chiefly Inside; capable of taking charge while present Head is on military service; good cottage. State full particulars and wages required.—GARDENER, Aldwickbury, Harpenden, Herts.

WANTED, experienced **SECOND GARDENER** for Indoor and Outdoor work.—Apply, MR. H. C. WRIGHT, The Grange, Knighton Village, Leicester.

WANTED, **GARDENER** for Norfolk; good wages and 3 tons coal yearly, wood and vegetables; very good cottage on premises, 3 bedrooms and garden, electric light and water laid out; boy to help; no Glass; comfortable place.—Write, giving full particulars, MRS. HUNT, LTD., 36, High Street, Marylebone. No charge to single men. Servants suited by us need not buy an umbrella, for it is one of the articles we give away free of all charge.

WANTED, for duration of war, experienced **GARDENER** (over military age); small Viney, Peach house, Carnations, etc.; one other man kept; furnished rooms. Apply, stating wages required, to MRS. STAFFORD, Chalfont, Ammester.

WANTED, **GARDENER** in Flower and Kitchen Gardens; one of three; able to scythe; ineligible; married; offered lodge, with garden and good wages.—HEAD GARDENER, Willoughby Hall, Grantham.

WANTED, at the end of July, a **GARDENER**; ineligible for military service; cottage and coal allowed. Apply, stating wages and age, with three testimonials, to C. F. NIGHTINGALE, 146, Lichfield Street, Walsall.

WANTED, **GARDENER** (ineligible), male or female, to take Charge of a large Garden, principally vegetable; help when required.—Apply, J. PHILLIPS, Willesden Paddocks, Oxgate Lane, Cricklewood, N.W.

WANTED, at once, **GARDENER**, male or female, for place in Bucks; good cottage.—Write Box E. F., care of W. H. Smith and Son, The Bookshop, Kingsway, W.C.

WANTED, **GARDENER**, male or female; Charge of Glass.—Apply, ADLARD, Postlip, Winchcombe, near Cheltenham.

WANTED, **GARDENER** (**OUTSIDE**) to assist Inside when required; good wages for suitable man.—Apply, with references, to L. FREER, The Lodge, Broadmead, Broad Lane, Hampton-on-Thames.

WANTED, a good, all-round **GARDENER** (4 kept); cottage provided.—Apply, with full particulars, to W. G. COTESWORTH, Rotheath, Chalfont, Sussex.

WANTED, for period of war, **GARDENER** or **FOREMAN**, capable of taking charge; must be ineligible; good wage to suitable man.—State experience, wage, etc., J. SLADE, Gwernyfed Gardens, Three Cocks, Breconshire.

WANTED, **UNDER** or **WORKING GARDENER**, at once; ineligible; single; good wages.—Apply to MISS BURDON, Munstone House, Hereford.

WANTED, at once, **UNDER GARDENER**, for Houses; ineligible for Army, wages £1 a week and bothy.—Apply, J. ALLEN, Calwick Gardens, Ashbourne, Derby.

WANTED, **UNDER GARDENER** for Kitchen Garden and Pleasure Grounds; used to scythe; ineligible; wages 18s., and cottage.—RAYNER, Southbrook House Gardens, Devizes.

WANTED, **GROOM-GARDENER** for the country; must understand horses and be an experienced Gardener; good references essential; wages 25s. and cottage.—F. K. PARKER, Wentfield, Fair Seat, Wrotham, Kent.

WANTED, **GARDENER** or **HANDY MAN**, Vegetables, Flowers, Lawns, etc.; few fowls.—Apply, RECTOR, Woodmancote, Henfield, Sussex.

WANTED, **LADY GARDENER** or ineligible **MAN**; experienced Vines, Carnations, etc.; to take control of Glasshouses; help given; comfortable furnished cottage or lodgings available; or **HEAD WORKING** (in garden), for duration of war.—Apply, stating experience and wages, to R. BRUCE WARD, Westwood Park, Droitwich, Worcs.

WANTED, **LADY GARDENER**, must be experienced, to take entire charge of Glass Department for duration of war; comfortable rooms and attendance; South of Scotland.—THOMAS METHVEN AND SONS, Seedsmen, Edinburgh.

WANTED, **FEMALE UNDER GARDENER** for Inside work, with some experience of Fruit and Plants; age 18 to 27.—Apply, stating age, experience, and wages required, with Bothy, light, coal, &c., to EDW. GILES, Hopedene Gardens, Holmbyr St. Mary, near Dorking.

WANTED, **FOREMAN** (**INSIDE**); married; 28s. and cottage; duty extra; also two **ASSISTANTS** Inside and one **OUT**; ineligible, over military age, or discharged; 25s. and Bothy; duty extra.—Apply, GEO. GURNEY, Bodnant Gardens, Taly-Cafn.

WANTED, **FOREMAN** (**INSIDE**); ineligible; wages 26s.; two in Bothy; Sunday duty paid.—GARDENER, Asynio Park, Banbury.

WANTED, **FOREMAN GARDENER** for the Houses; ineligible; state wages; Bothy, milk and vegetables found.—S. SALT, Amington Hall Gardens, Tamworth.

WANTED, **JOURNEYMAN** (**INSIDE**), ineligible for Army; wages 20s. per week and 2s. war bonus; Bothy, milk, and vegetables.—Apply, F. C. KING, Manor House Gardens, Effingham, Surrey.

WANTED, experienced **MAN** for Hardy Fruit and Kitchen Garden; good wages.—WESTON, Eastwell Park Gardens, Ashford, Kent.

WANTED, **MAN** (ineligible) for Lawns, etc.; good lodge provided; also **TWO LADS**; Kitchen and Pleasure Grounds; Bothy, etc.—Apply, GARDENER, Wilton Park, Beaconsfield.

WANTED, a **MAN** with some knowledge of Kitchen Gardening; does not matter if considerably over military age; wages 25s. per week.—Apply, W. HOWE, Park Hill Gardens, Streatham, London, S.W.

WANTED, Three **MEN** for General Outside Garden Work (ineligible), or **YOUTHS** under military age; good wages; overtime paid; 1 o'clock Saturday; and Bothy. One experienced **JOURNEYMAN** for Inside; good wages; overtime and Sunday duty paid; Bothy.—Apply, stating age, experience, &c., to HEAD GARDENER, Fairlawne, Tonbridge.

WANTED, active **YOUNG MAN** for the Houses, with good experience in Fruit and Plant Growing; also Strong **YOUTH**; wages 25s. and 15s. per week, Bothy and vegetables.—Apply, with reference, to J. BOTTRELL, Sudbury, Derby.

WANTED, as **IMPROVER** in the Houses, a youth 16 to 17 years of age; wages 17s., Bothy and vegetables; Sunday duty and overtime paid; 1 o'clock Saturdays.—BASTIN, Buscot Gardens, Faringdon, Berks.

TRADE.

WANTED, **MAN** to take full charge of Small Market Nursery if owner called up; ineligible, married; Bedding Plants, Cucumbers, Tomatoes, etc.; state wages.—T. PIXLEY, Waddington, Lincoln.

WANTED, competent **WORKING FOREMAN** (ineligible); must be an experienced grower of Carnations and Tomatoes, a good organiser and manager of men; must have first-class references.—Write, giving full particulars as to experience, wages, &c., H. BURNETT, St. Margaret's, Guernsey.

